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Telephony

The Journal of the Telephone Industry

FALL RURAL ISSUE

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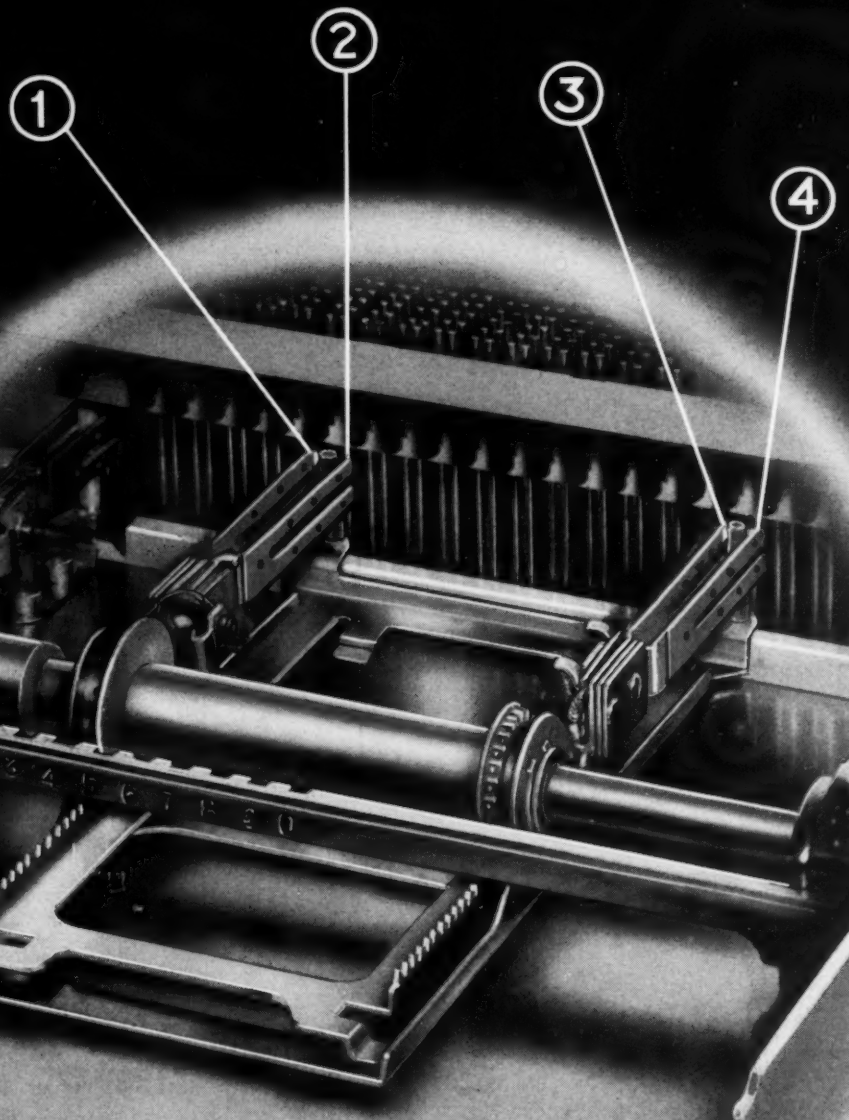
STROMBERG-CARL



Close-up of the XY Switch during the "X" movement. Wires (1) and (2) are Tip and Ring; number (3) is the Sleeve Conductor; and number (4) the famous 4th Wire which solves party-line and dozens of other problems.

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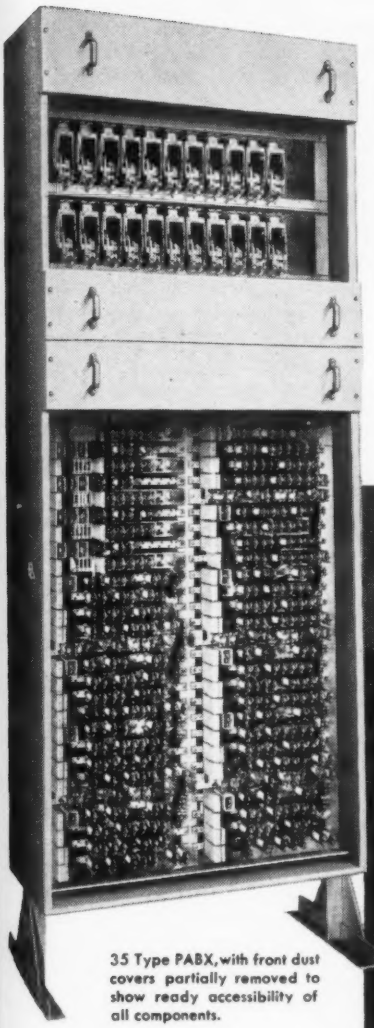

35 Type PABX, with front dust covers partially removed to show ready accessibility of all components.

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10 Central Office Trunks

and

99 Local Stations
12 Local Links
10 Central Office Trunks

All equipment for the 49-line unit is contained in a single rack, 8¾' high, by 38¼" wide, by 19¾" deep.

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Check your rate structure for interesting revenue possibilities obtainable through the new and improved service features provided by Federal PABX equipment.

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FLASHES AND PLUGS

MOST OBLIGING. Police, who are accustomed to persons objecting to arrest, were amazed when a Tacoma, Wash., man arrested himself. Officers received a call to investigate a report that a man was beating his wife. The report proved true. Officers reported the man looked at them, said, "I'm under arrest," and walked to the paddy wagon. He let himself in, closed the door, and said, "Police station, please."

• • •

TOO AMBITIOUS. An ingenious "market research" scheme operated by two Kansas City, Mo., men backfired and landed them in jail when a salesman at one of the city's stores became suspicious.

Calling persons whose names they had picked at random from the telephone directory, the two "researchers" represented themselves as making a survey for the "St. Louis Retailers." They wanted to know how many persons had charge accounts in department stores and whether they planned to use them for Christmas shopping.

A woman customer admitted possession of an account at a certain store and an intention to use it during the coming Yuletide season.

A short time later, a clerk at the store received a telephone call that purported to come from the customer, ordering a $38 radio and asking that it be delivered to the street store entrance where someone would pick it up. The clerk called back and learned the customer had made no such call.

When the telephone callers appeared at the store entrance, they were given the radio and a warm welcome from detectives posted nearby. The survey has been postponed indefinitely.

• • •

NEVER LOST. For 48 hours the Camden, N. J., police radio called the description of a stolen auto. Finally it was found. Two traffic tickets for overtime parking were on the windshield.

• • •

THOSE SUDDEN DROPS. Japanese residents of Nagoya won't be surprised if a few people drop out of sight during dark nights.

People are lifting Nagoya's wooden manhole covers for scarce firewood. The army yanked the old metal ones for scrap during the war.

Authorities put down cement covers where possible, but gaping holes are common every morning as the old wooden covers disappear.

• • •

THE CAUTIOUS CALLER. And then there's the story about a lady who telephoned the fire department and, after giving her name and address, began:

"I have a lovely new garden into which I've just put 800 petunias and gladioli."

The fireman interrupted: "Where's the fire, lady?" . . . "Just a minute," she answered, and continued, "The evergreen shrubs cost me $160 and—" The fireman interrupted again, "Where's the fire?" . . . "The whole landscaping job, in fact, cost me $750," replied the lady. . . . "Where's the fire?" repeated the harassed fireman. . . . "Right next door," she told him, "but I don't want you clumsy firemen trampling over my garden when you arrive."

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

December 4, 1948

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HOUSING UNATTENDED EXCHANGES

By RAY BLAIN

ADEQUATE housing of unattended dial exchanges is a major concern of a considerable number of operating telephone companies throughout the industry, particularly small companies. It has been proved conclusively over a period of years that the use of carefully engineered unattended dial units, properly located, often materially reduces the cost of the distribution plant. While elaborate buildings are not required to house these exchanges, certain basic principles must be observed if equipment is to operate satisfactorily.

When planning the construction of a new building to house an unattended dial exchange, the services of a good architect should be obtained to confer with the telephone engineers of the company involved. The principal factors to be considered are location, size, type of construction, appearance, fireproofing, heating, ventilating, lighting and humidity control. An attempt will be made in this article to describe in detail how some of these important factors may be considered. We do not claim any originality in this connection since all of the ideas presented have been previously tried and proved in actual practice.

Fire-proof construction is preferred in every case of housing unattended dial exchanges. Although frame structures have been used to some extent, the fire hazard is always present and insurance rates are correspondingly high. However, if frame buildings are used they can be improved considerably by covering the outside walls with asbestos siding. Wall-bearing type construction of brick, cement or cinder block, hollow building tile, or poured cement, have been used extensively in the past and have proved to be entirely satisfactory when properly constructed. In some of the western states, stucco on wood or metal studding has been used successfully.

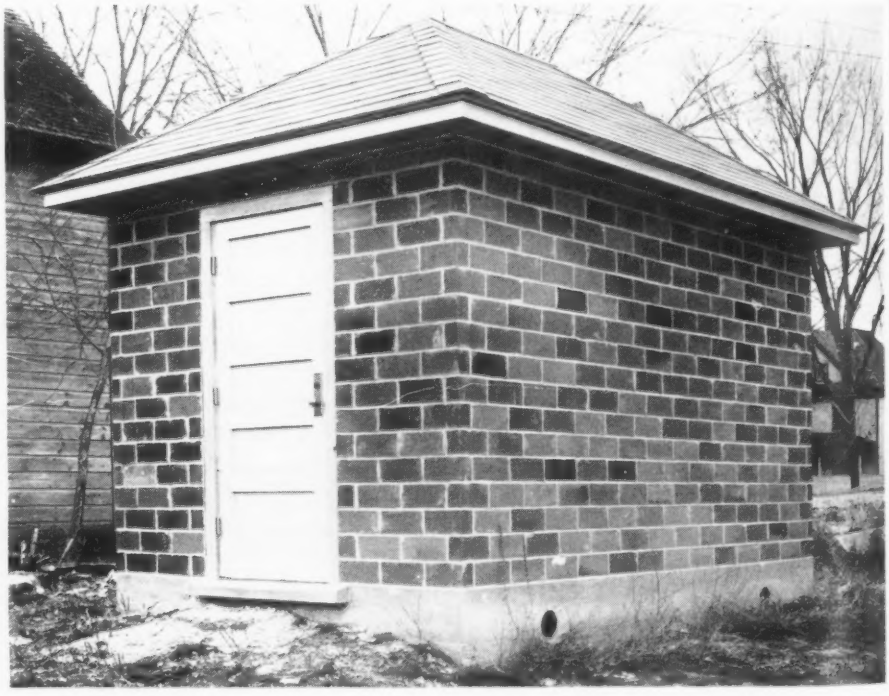
As a rule, brick presents the best appearance with hollow building tile running second. The appearance of cement or cinder blocks, or poured cement walls may be improved upon considerably by the application of one of the numerous masonry paints now on the market. Decorative trim is usually considered unnecessary on buildings of this type as the severely plain type is generally thought to be more attractive.

Ordinarily, the unattended dial exchange building does not contain a commercial office as such exchanges require no operators or public entrance. Therefore, these factors need not be considered in determining the location of the building. The primary consideration then is the wire center which permits the greatest savings in the distribution system. This location will, in the majority of cases, be near the business section in order to economically serve the greatest concentration of telephones. This does not necessarily imply that the exchange must be located on a principal street, as a side street between the residential and business sections usually meets all requirements. A location at the rear of a lot can often be utilized to advantage. Whenever possible, a landscaped setting is to be preferred. In rural areas, a location is sometimes selected near the center of telephone distribution of the area to be served.

The size of the proposed building will be governed by the amount of equipment to be installed. The initial and ultimate equipment which will be required to serve the exchange area must be considered. The ultimate is, in most cases, based upon a forecast study of the prospective growth for a 15 to 20-year period. In this connection, it usually proves more economical to plan and construct a building of a size sufficient to house the ultimate equipment requirement rather than to provide one to care for the initial installation, with the probability of constructing a building addition at a later date.

The unattended exchange building must house the switching equipment, main frame, storage battery, power board, charging equipment and ringing generators. The wall type main

These two buildings house unattended dial exchange equipment at Union Mills, Ind. (left) and LaCrosse, Ind., exchanges of the Indiana Associated Telephone Corp.



UPPER LEFT: 100-line unattended dial exchange building of the Illinois Commercial Telephone Co., at Thompsonville, Ill. UPPER RIGHT: Building for 600-line unattended exchange at Johnston City, Ill. LOWER RIGHT: 200-line unattended dial exchange building of the Commonwealth Telephone Co. at Plain, Wis.

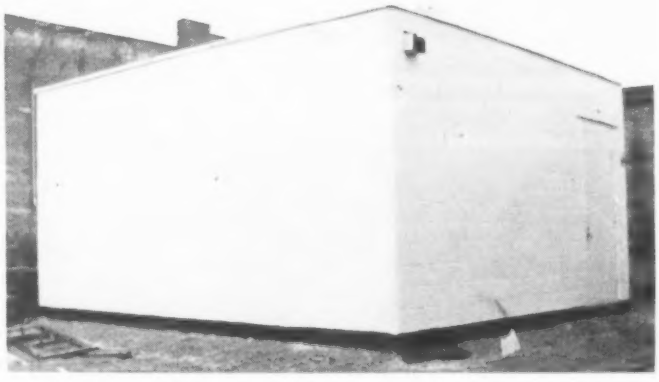
frame, which is a space saver, is often used in the smaller exchanges. A test desk or work bench—sometimes both—is considered necessary in the larger unattended dial exchange. The shape of the building and the ceiling height will depend to a considerable extent upon the type of equipment to be installed. The manufacturer from whom the equipment is purchased will be glad to give detailed information on this subject. The conservation of space by crowding equipment to such an extent as to make maintenance work difficult to perform is never considered desirable. Ample aisle space should be provided in all cases, since this will greatly facilitate maintenance operations.

On the whole, basements are not required in unattended buildings and, for this reason, the type of foundation will depend upon the kind and size of building to be constructed. Local conditions, such as drainage and soil, also must receive proper attention. The design will be different, depending upon whether the floor slab is placed directly on the ground or is elevated. A good foundation of reinforced concrete is necessary in most cases in order to reduce settling of the completed building to a minimum. Under average conditions, these foundations are from 10 to 12 ins. in width and placed on reinforced concrete piers. These piers are five feet or more in length, contingent upon the nature of the soil and the depth of winter freezing. These specifications are furnished only as a rough guide. Your local architect will be able to determine and furnish the design best suited to each exchange.

The walls of an exchange building, regardless of the material used, should be constructed with a view to providing fire-proofing, damp-proofing and economical heating in cold climates. In other words, adequate insulation is a *must*. To insure dry walls, an air space should be provided between the inner and outer walls. This feature is automatically provided when walls are constructed of hollow tile, cement or cinder blocks. This provision is not conveniently applicable, however, when poured concrete walls are employed. One type of building construction utilizes brick veneer over studding, with lath and plaster forming the inner wall surface. Although this type of construction affords good insulation, it is not strictly fire-proof.

It is often considered a good plan to provide ventilators low in the front of the building and high in the rear. An exhaust fan also is employed to circulate the air through the building. These ventilators may be opened or closed manually, or by remote control by dialing over a trunk from the main exchange. The ventilating fan may be started and stopped in the same manner. The ventilators may be opened in good weather when the air is dry, but must be kept closed during inclement or humid weather.

A fireproof roof is most essential to the unattended dial exchange building. When a reinforced concrete roof slab is used, an air space should be left between the slab and the ceiling. If this is not done, a cinder fill and a



Three unattended dial exchange buildings of the Interstate Telephone Co.—Fairfield, Wash. (upper left): Latah, Wash. (upper right), and Garfield, Wash. (right). Hip roof construction is designed for all 100-line units with inside measurement of 9 1/3 ft. x 12 ft. Garfield building is 16 ft. x 20 ft. and will house 300 lines or more. Buildings for 200-line units (not shown) measure 12 ft. x 20 ft. This company has standardized on concrete block construction.

fire-proof roof should be installed over the roof slab. A sloping roof is to be preferred over the flat variety for the sake of appearance and is necessary in areas where snowfall is heavy. If the pitch of the roof is steep enough, the snow will slide off and not overload the structure. It is generally considered desirable to omit eaves which avoids ice accumulation during thaws. If parapet walls are used, snow and ice will accumulate in winter and the expansion and contraction during freezing and thawing weather is likely to damage the building structure.

Asbestos or slate shingles are to be preferred because of their fire resistance and long life qualities. The fire resistant qualities of a flat concrete slab roof and the better appearance of a peaked roof have been combined by Fred S. Florance, general manager, Highland Telephone Co., Monroe, N. Y. This company constructed the concrete slab roof and then built over it a peaked roof of conventional type. It is the opinion of this company that the upper roof could burn off completely and the fire would not damage the interior of the building.

In locations where adequate drainage of the building site cannot be obtained, an elevated reinforced concrete floor slab is recommended. With this type of construction, a space of 18 ins. or more is provided above the grade lines to the bottom of the floor slab. Vents should be provided in the foundation walls so that this space under

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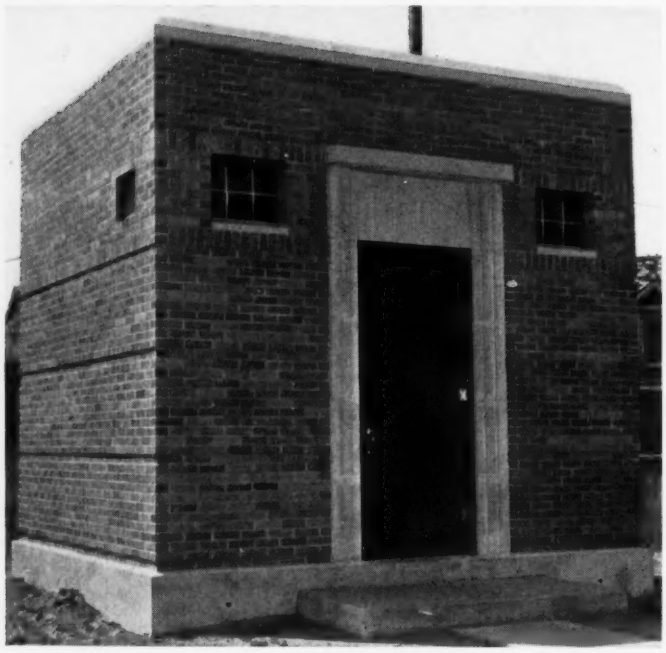
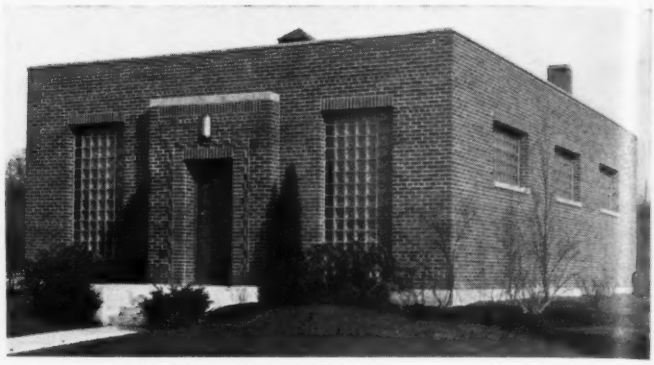
Unattended dial exchange at Washingtonville, N. Y., operated by the Highland Telephone Co. This is a reinforced concrete slab roof over which was built a peaked roof of conventional design. The peaked roof probably could burn off completely and not damage the interior of the building.





ABOVE: Unattended dial exchange building at Racquette, N. Y., exchange of the Upstate Telephone Corp. of New York. The two photos at the right show buildings at the Johnson-Westmont and Pleasantville exchanges of the Pennsylvania Telephone Corp.

the floor will be well ventilated and, generally, will remain dry.

When the building location is high and good drainage can be obtained, the concrete floor slab may be placed directly on the ground. However, in this case, it is recommended that first about 18 ins. of tamped cinders be placed on the ground. It is then suggested that a three-inch slab of rough concrete be constructed on top of the cinder fill, this to be covered in turn by a thick layer of asphalt. On top of this, it is suggested that a one-inch, thick-finished concrete floor be placed. This arrangement will provide a thoroughly dampproof floor in practically any climate. The concrete floor covering may be either three-sixteenths of an inch linoleum of good quality or asphalt tile. The latter is generally to be preferred as repairs can be made more easily by replacing worn tiles as is required.

As a rule, windows are not considered necessary in the unattended dial exchange building of today. The omission of windows reduces dust troubles to a large extent. Moreover, moisture troubles are reduced during humid or stormy weather if windows cannot be opened. Glass brick may be used to simulate windows which improves the appearance and furnishes sufficient natural light inside the building. If windows are provided, extreme care should be observed in fitting the frames so that they will be both dust and moisture-proof. When windows are placed near an adjoining building that may become a fire hazard, metal frames and wire glass should be used. Suitable bars or grating should be placed over windows where protection from vandalism is required.

In general, only one door is required in an unattended dial exchange building. It should, however, be of sufficient size to admit any equipment which may be installed in the building. Usually, a door of standard size will prove adequate. It is desirable to hang the door so that it will swing out to reduce space requirements inside. If the door is made of wood, it should be covered with sheet metal on the inside to insure fire protection. Door frames also should be dust and moisture-proof.

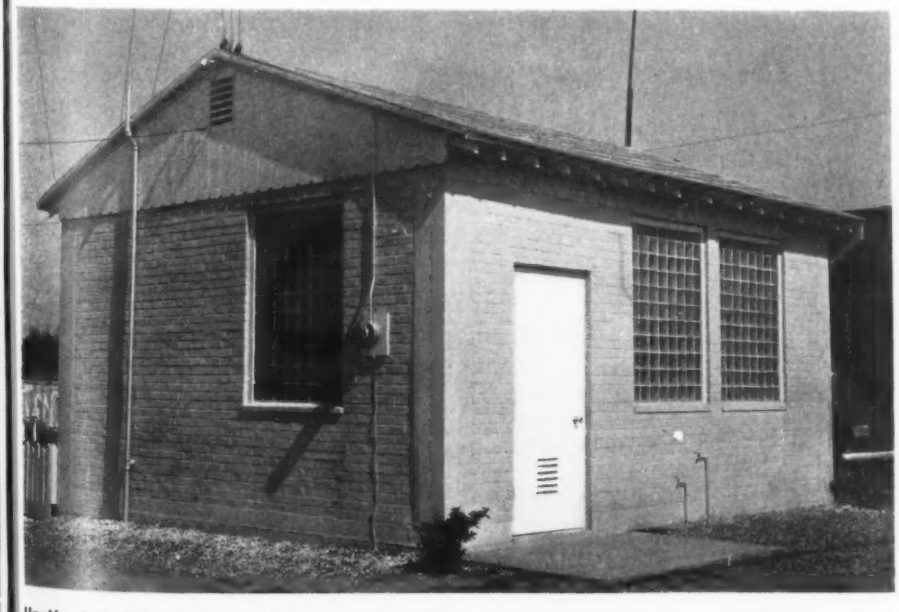
Plaster walls are highly desirable for use as an interior finish. These walls may be painted and are comparatively dust-free and easily cleaned. Common brick, cement, or cinder blocks may be given two coats of good masonry paint. Celotex, or any of several good types of wall board, may be used for the ceiling; any of them will prove highly satisfactory. These ceiling coverings may be painted with two coats of flat white. The paint used on the interior of equipment rooms must be free of turpentine or other volatile oils, the fumes from which are harmful to central office equipment.

Unattended dial exchange building of the York (Pa.) Telephone & Telegraph Co. at Red Lion, Pa.

Two buildings of the Lorain (Ohio) Telephone Co. housing unattended dial exchanges. The Avon Lake building (upper left) is 52 ft. x 57 ft. and contains a commercial office. It is designed for a second floor addition if and when required. Vermilion building (upper right) is 36 ft. x 41 ft. and houses 400 lines; 200 additional lines are on order. The photo at right shows the basement of the Avon Lake building.

Some telephone engineers contend that heating is not necessary in an unattended dial exchange. When heating is not provided, in a cold climate, it is usually recommended that the storage battery capacity be approximately 25 per cent above that which would normally be considered necessary in a heated building.

Other engineers argue that heat of some kind is necessary in an exchange of this type for the comfort of maintainers when routining and clearing trouble on equipment. Various types of heating plants and fuels are available, the use of which is dependent upon the climatic conditions encountered. The use of open flame gas or gasoline heaters should be avoided where possible, as they consume a large amount of oxygen from the air and the fumes released by the combustion are injurious to health and some metals. This is especially true of natural gas. When automatic gas heaters of any type must be used, they should be installed permanently and well ventilated. Gas entering the unattended dial exchange building of the Michigan Bell Telephone Co. at Flat Rock, Mich., from an outside source, caused an explosion that completely demolished the building on Feb. 12, 1948. Fortunately, no one was in the building at the time and the switching equipment for 1,000 lines was damaged only slightly.



Unattended dial exchange building of the Associated Telephone Co., Ltd., at Strathmore, Calif. This building is typical of the small office design of this company. They vary in size as well as window and door location to suit the locale, but structurally they are the same in each case. Note ventilators in door and gable.

Radiant heat which is provided by embedding hot water pipes in the concrete floor slab is an ideal means of providing heat in an unattended dial exchange building in a cold climate. This type of heating, however, proves rather expensive. In localities where the climate is not especially severe, electric heaters often may be used to advantage. This type of heater, equipped with a fan, furnishes an ideal arrangement for furnishing quick heat for use of a troubleman while working in the exchange. On the occasions when troublemen may forget to turn off the heat after completing their work, an automatic disconnect arrangement may be provided.

Actually, most dial switching equipment may be operated successfully in

(Please turn to page 54)

Breaking Holiday

TOLL TRAFFIC BOTTLENECKS

By RALPH R. MABBS
Illinois Bell Telephone Co.

AN UNCOMPLETED toll call is about as useless as a Dresden cup with a hole in the bottom. Most anything from glue to tea dribbles out of the bottom of such a container . . . just as "drops" of goodwill and revenue are lost when a telephone call is not completed.

Plug up that hole and your cup is again useful. Complete that call and you have a satisfied customer.

At Christmastime, toll completion takes on a new look. Paradoxically, the telephone call becomes both easier to sell and more difficult to sell. To the Christmas telephone user, our product has a special personal attraction. But it is also stubbornly difficult for us to deliver.

The operator knows what completion of a call on Christmas means to her Yule-minded customer. That message is one of his most important of the year —the next best thing to wishing Aunt Nellie or Mom a "Merry Christmas" in person. But let it be delayed for some reason, or not get through at all, and the caller is greatly disappointed; so are Aunt Nellie and Mom; and so is the operator.

Most of us are familiar with the obstinate characteristics of this frisky Christmas traffic fellow. It isn't that he goes running off in all directions at once (the volume of calls filed during the holiday period is not much greater than on normal business days), but the fact that he picks voice highways not generally heavy-travelled.

He heads for small villages, crossroads and quiet farm communities which are not equipped for heavy call volumes. He's a "long-tripper" — to the Pacific Coast, the southwest, Florida, and the Gulf Coast . . . to the vacation areas where many retired people spend the winter.

He requires more switching, more multi-switching. And his personality is new: Person-to-person traffic is higher; nearly all traffic originates and terminates in homes; many of the calls come from infrequent telephone users who need coaching on placing a toll call.

TEAMWORK ESSENTIAL

"Completion" at Christmas time —relieving switching centers, reducing delays and preventing traffic bottlenecks from developing—requires close teamwork at all local, toll and switching offices, large and small. This article calls the plays for the kind of teamwork which completes holiday calls.

In other words, this headstrong traffic oddity has the knack of causing bottlenecks and "snowballing" traffic to a near freeze. He lowers completion; permits fewer conversations. And he's tough on the operator's speed. He makes her take longer to record the calls. She must refer more frequently to "Rate and Route," and hold her recording and toll switching trunks and her toll circuits longer. NC's (no circuits) are up, more delays are posted and the operator must make more frequent reference to "Information" at the terminating end.

The main key to this traffic problem is at the switching centers; Chicago, St. Louis, Atlanta, New York, Dallas, San Francisco and Los Angeles. In these bustling offices, telephone people are faced with the colossal job of completing switches to overloaded circuit groups.

But, delays do not begin at the switching center. How toll calls pass through the originating toll center is dependent on how things go at the switching center. At the toll center, wasted circuit time, inefficient operation and position time and all of the other varieties of delays pile up with tens of thousands of call orders. Even with objective equipment changes and additions and special operating practices relieving the switching centers, deviations from correct holiday operating procedures in the toll centers can put the hex on completion and contribute to long delays.

The traffic man has been a watchful warden of Christmas traffic, carefully gathering information about this annual non-conformist and chaperoning dress rehearsals on Mother's Day, Thanksgiving, New Year's and Easter. And his efforts to keep calls away from the switching centers have paid off with some good break-the-bottleneck ideas.

The May 9 (Mother's Day) nationwide dress rehearsal for Christmas traffic was held with most attention focused at relieving through-switching centers. The principal steps included the patching of circuits—rerouting the voice highways—around the through switchboards, teletyping delay quotations from switching centers over special circuits to originating toll centers and paying closer attention to pertinent operating practices.

We can look for these keep-calls-away-from-the-switching-center items again at the 1948 Christmas "premiere." In addition, we can expect greater completion because of recent telephone equipment additions in the nation's exchanges and along its highways. Thousands of new toll switchboards and other toll apparatus have been installed this year. New direct circuits are carrying toll calls. Operator toll dialing — automatic and quick — has been extended to more toll centers.

You Can't Shackle Him to the Main Frames

As one traffic man said, it sure would be nice if there were a single answer to this Christmas weekend problem-fellow—just a simple matter of shackling him to the main frames until the holiday is past. But since it's not like that and he's a mounting accumulation of factors, neutralizing him requires a combination of many and varied tacks. To keep the most effective use of trunk, position, circuit and operator time, here's a review of some of the major help-completion items:

Adequate operating force—local and toll—and ample, *qualified supervision* can't be over-emphasized. Obviously, experienced operators are one of our greatest assets on heavy traffic days. So that no delays develop from slow answering or slow handling, toll, information, "B," inward and TX positions should be staffed "adequate plus." Supervisors, well on board as to Christmas traffic problems, can help that completion figure considerably.

No one will deny that a bit of "sharp shooting" here and there gets individual calls through. But it's like sweeping around end to a score only to have it called back for backfield-in-motion. Instead of gaining by the long run, there's a loss; fewer calls are completed.

Follow the operating practices.

Give accurate filing times.

Stick to authorized routes. (Special holiday routes are authorized for some traffic—be sure your list is up to date.)

Stay on the toll line. (See Division F of the Toll Operating Practice for authorized deviations.)

Ring on only one toll circuit even though a slow inward answer is encountered.

Select one recording trunk on each call and stick with it. Similarly, *stay with the first switching trunk selected in cases where "B" service is slow.*

Watch those disconnect and cord signals, for circuits released at one end are likely to be picked up immediately.

Keep customers advised of changing conditions in the progress of a call. (If possible, this should be done away from the switchboard.) *Be sure the customer's order is thoroughly understood.*

Hold the calling party on the line. (Except when NC conditions are encountered.)

Secure the route at the same time that rate information is obtained.

Use Delay Tables whenever possible, assigning experienced toll people and making as few force changes as practicable in delay table operators' assignments.

Review and Review holiday operating practices — before the holiday — under conditions of posted delay.

Review the Call Order Practice

Tried last Christmas, tested on other holidays and remodeled for use this December, is the call order practice, a proven circuit-saver. The toll operator is helped to her proper turn in the circuit "waiting line" by its cooperative use.

Duplicate call orders are of no use to anyone. Because they result in poor use of circuits, the practice recommends that operators leave only one call order to a particular circuit or group. Originating operator's time is saved and the switching center is relieved of answering signals and making duplicate call orders. If no active call is waiting which can be completed on the route involved, call orders should be cancelled at the first opportunity.

Give honest-to-goodness filing times and do not waste time "bickering" on circuits. With more calls waiting than there are circuits to carry them, it is only fair to the caller—and the outward operator—that correct filing times be used.

A first cousin to the call order practice is the procedure an outward toll operator uses when she has more than one call to the same terminating toll center. After she secures a circuit, the operator says, "Challenge on here," to the inward operator to whom she expects to pass another order after disposal of the first. Having established the connection, the inward operator will attach a cord clip to the toll cord as a reminder to challenge upon receipt of a disconnect signal.

Teamwork Completes the Call

The picture isn't dazzling—but it's hopeful.

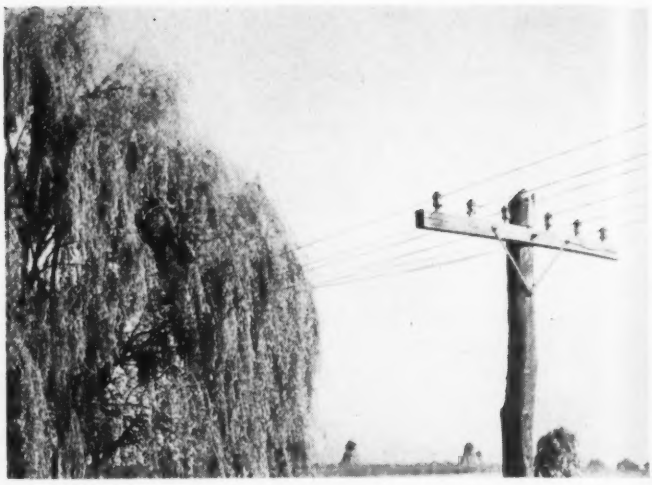
Traffic this holiday weekend will be high. In fact, all indications point toward a substantial increase over last year's. And with Christmas and New Year's occurring on Saturdays, it is probable that the following Sundays will also be heavy. Operators will go a step beyond the normal practice by offering their customers completion of a previously delayed holiday call on Sunday.

Delays will begin early Christmas eve. For example, traffic people at the Chicago switching center predict some one-hour delays by 6:00 p.m., with delays as high as six hours at 10:00 o'clock. Beginning with one-hour delays at 9:00 a.m. Christmas Day, the traffic peak is expected at approximately 5:00 p.m. Delay quotations as high as 14 hours are possible to some points.

With the close cooperation of the nation's operators, nevertheless, much will be accomplished toward shortening delays and speeding calls through the switching centers. But good service to the telephone user means more than getting the call through. It also means courteous, considerate service.

An operator can preserve customers' goodwill by giving understanding assurance that we're doing our utmost under difficult conditions. And she *will* do her best, for she knows *teamwork completes the call.*

A gentleman out in Hollywood is said to have established a Sunset Boulevard office for an organization known as "Impossible Pictures." Ever since a local columnist published the telephone number the bell has rung constantly. However not much business is transacted, for callers just laugh and hang up when the secretary answers "This Is Impossible."



LEFT PHOTO: Higher poles are required to obtain proper clearance as permission can not be obtained to trim fruit trees. **RIGHT PHOTO:** Trees in the line frequently cause inferior transmission on rural lines.

PREVENTIVE MAINTENANCE

Of Open Wire Lines

By W. H. MARTIN

NOW is the time for all good telephone men to come to the aid of their ailing open wire lines! This is especially true of old rural lines, since minor preventive maintenance measures undertaken at this time may save expensive trouble and service interruptions later, probably during inclement winter weather. The clearing of trouble and the repair of storm breaks under adverse weather conditions, in a cold climate, usually proves a most difficult and expensive operation.

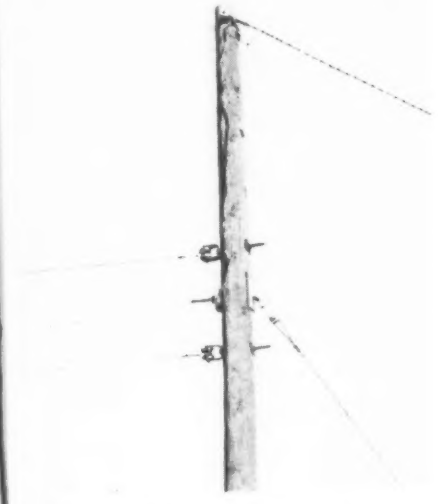
It always is a good plan to cover all open wire lines during seasons of good weather for the purpose of correcting all abnormal conditions which are considered potential sources of trouble. In making these repairs the future service requirements of the area also should be considered. With this objective in mind, if a bracket line has an ultimate requirement for five circuits, it usually is a good practice to provide all new poles of a size and class adequate to accommodate a 10-pin crossarm when the service is expanded. Gained poles should be purchased, as gaining always proves to be a rather difficult operation on a standing pole. Likewise, if a four-pin crossarm is replaced on a line that will ultimately carry five circuits, it usually is a safe practice to install a 10-pin crossarm to avoid a later change. New corners should be designed to adequately support the heavier line. Planned preventive maintenance along these lines will result in ultimate savings in both labor and materials.

When old poles have deteriorated to a point where they are considered un-

LEFT PHOTO: When the use of high poles to place wire over trees proves too expensive short poles may be used to extend lines under trees. **RIGHT PHOTO:** Vines covering a pole in this manner might prove to be a serious detriment to transmission.

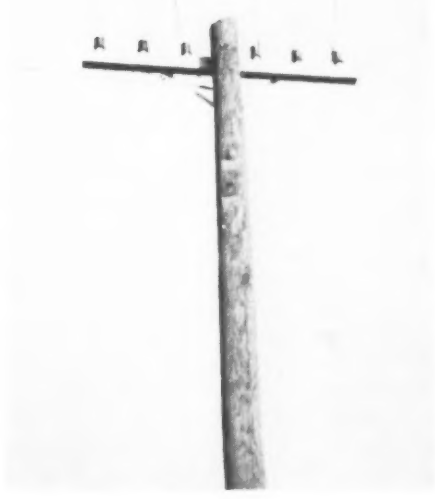
Use of H-type pole fixtures prove desirable and economical for storm guying on open wire lines. They also may be used on corners where guying space is limited.

Example of how long span construction often proves economical on rural lines.

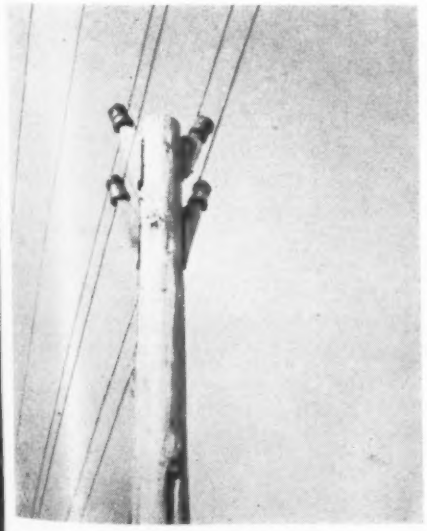


Use of long poles is recommended when service drops extend across road.

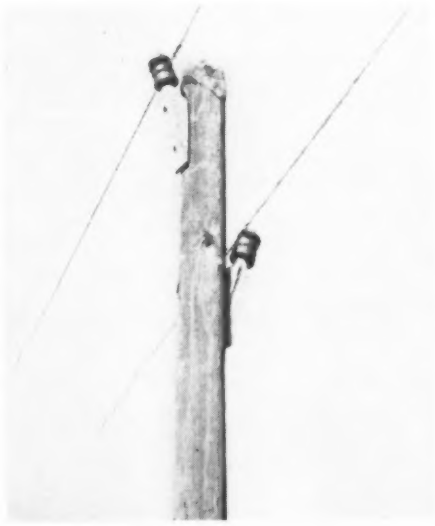
Special fixtures used for deadending bracket circuits. Note solid wire guy.



This is an example of good line construction using six-pin crossarms.



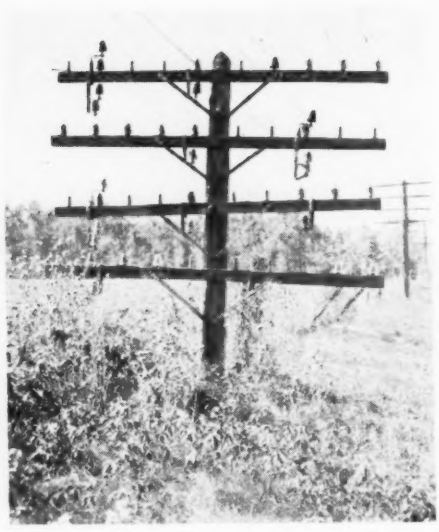
Brackets are bunched too much on this lead. This pole is not gained.



Proper placing of wood brackets to support one circuit on a pole line.

The push brace often may be used to hold a corner pole.

All weakened and split crossarms, like this one, should be replaced.



Resetting of poles is recommended but this is carrying the idea too far.

Broken poles like this one should be reset, stubbed or replaced.

safe they should be reset, stubbed, or replaced. It usually is a cheaper practice to reset all poles in locations where suitable clearance can be obtained. When an unsafe pole happens to be located near a road, or in trees where a certain ground clearance must be maintained, the pole may be stubbed, if replacement with a new pole is not desired. Good, well-treated stubs should always be used and set to the required depth for the pole being reinforced. The pole should be attached to the stub by the use of clamps especially designed for this purpose.

When poles are replaced, they should be selected with care and set in locations best suited for the ultimate planned line. Pole spacing is always one of the most important factors affecting the cost of open wire construction. The fewer the circuits on a lead, the larger becomes the ratio of the cost of the poles to the total line value. Actually, the cost of the poles varies inversely with the pole spacing, and obviously one of the best means of decreasing line costs is the use of long spans. Required ground clearance and pole spacing of the ultimate line should be carefully considered when new poles are placed in an old line. This is especially important when it is considered that the average present-day treated pole will probably have an average service life of from 30 to 50 years.

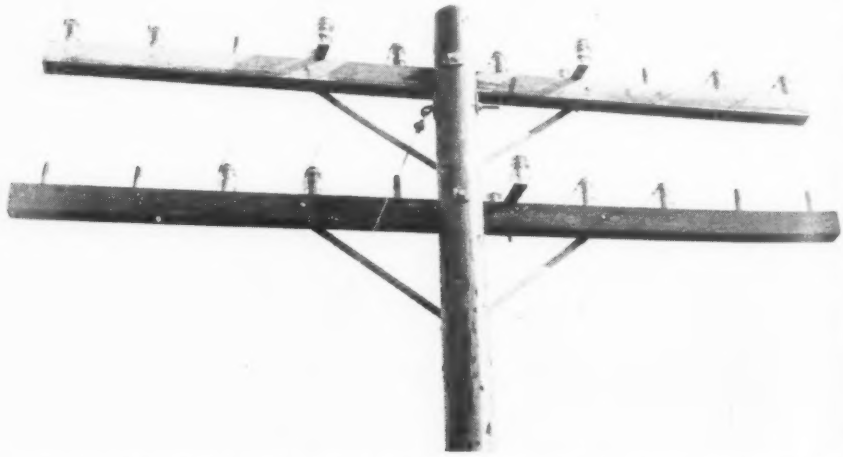
Visual inspection will, in most cases, indicate defective crossarms. If an arm is starting to dry rot, so that the pins drop or kick to either side, it is doubtful that it can support the extra strain of winter storms. In this case, the only remedy is replacement with an arm suited to the needs of the ultimate line. In this connection, it sometimes proves to be a good practice to replace a four-wire line with a 10-pin crossarm. In other cases, economy may dictate the continued use of wood brackets until such time as additional circuits are added. During the period of time between the present overhaul and the ultimate expansion of the line, necessary facilities will be the determining factor.

The practice of deadending open wire on the pins of a standard crossarm has caused considerable trouble when heavy strains are encountered. This is true even when double crossarms are used because of the warping action caused by heavy strain on the pins. A more satisfactory method of deadending is to use a special strain insulator attached to the center of the crossarm by a clevice arrangement. Fixtures for this type of deadending may be purchased from suppliers. A special strain insulator that is attached to the pole by an eye bolt also is available and it is recommended in preference to wood brackets for the deadending of bracket circuits.

On a rural line overhaul, it is usually necessary to untie all line wire, pull out the slack and level the wires in the spans. All sizes of line wire commonly used on lines are subject to per-

(Please turn to page 58)

Use of special fixtures is recommended for deadending of open wire lines.



Here the eye bolt method is used to attach down guy to pole. Note the tandem type transpositions.

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH
WASHINGTON EDITOR

Administration's hatchet men start out on anti-business campaign. . . . Advises business men to conduct energetic program of supporting constructive legislation and greater education of public as to needs of industry. Fallacy of "original cost" theory of rate base valuation emphasized.

SCARCELY was the recent election over when the administration's hatchet men went into action on various fronts against "big business." The Treasury Department's well-trained pack of anti-trust lawyers began riffling their portfolios and thumbing over the list of likely industrial targets. Secretary of Labor Tobin began talking about "prompt" repeal of the Taft-Hartley Act. Senator McGrath of Rhode Island, Democratic National Chairman, called for early revival and enactment of the excess profits tax.

Outside of the administration, labor union interests joined the anvil chorus of demands calculated to make the businessman wonder why in the world Thanksgiving Day was ever invented. Philip Murray, president of the CIO, spoke right up for a one dollar an hour wage minimum to the Fair Labor Standards Act. Meanwhile, the International Association of Machinists demanded an investigation of so-called "vicious lobbies" in Washington. By "vicious lobbies," of course, the union leaders principally meant those Washington representatives of business interests.

As a matter of fact the most effective and well-heeled lobby in Washington today is the labor union lobby, which is already rehearsing a triumphal attack on the Taft-Hartley law to be launched next January. But you can bet your bottom dollar that nobody inside or outside the government is going to bother the labor lobby. The brick bats and dead cats are being exclusively reserved for the task of "giving business the business." Even now, the farmers' lobby, ably represented in Washington by former Senator Burt Wheeler of Montana, is attacking the constitutionality of the lobby registration law in the federal courts of the nation's capital.

About the only silver lining for the businessman—specifically, the telephone businessman — which your correspondent could find on the Washington rialto after picking around strenuously and turning over rocks on Pennsylvania Avenue, was a rather vague announcement from unofficial White House sources. This was to the effect that the administration is disposed to "allow" a reduction in the high wartime excise taxes. No specific description of the particular excise taxes which would be the subject of reduction or elimination was vouchsafed, other than the rather general statement that the President would like to relieve the consumer of some of the burden of "nuisance" taxes.

Whether this means that the Democratic majority in the next Congress will move for a reduction of the excise taxes on telephone toll calls or monthly exchange bills is an open question. Most of the hollering about excise taxes of late has come from the entertainment and retail trades which have been hard hit by the old man with whiskers cutting himself in for one dollar out of every five dollars to go into their cash registers. Some of the fur dealers claim that this is the bleakest pre-Christmas buying season they have witnessed since the great depression of 1930. And a number of nightclubs are known to have folded right up, under the blizzard of empty white table covers.

What "Excess" Profits?

It is easy to see what the administration has in mind in knocking out some of the "nuisance taxes." It is simply a little sugar coating for the masses to make the bitter pill of even higher taxes on corporate incomes go down more easily. The idea seems to be that if the people can get the tax knocked off the pleasant process of eating, drinking, and making merry, it will take their minds off the aforesaid business of "giving business the business." But even if a reduction of the excise taxes on telephone business proves to be true it can be more than offset, at this particular time, by the imposition of excess profits tax.

Indeed, there are a number of telephone companies which would be in a worse financial position through the restoration of the excess profits tax even if the excise taxes were eliminated entirely. To put it another way, some telephone companies would be better off—if a choice had to be made—riding along with the present high excise taxes on telephone calls and exchange bills, provided the excess profits taxes were kept away from their doors.

The so-called excess profits tax is really a misnomer. It represents a major victory for the slick masters of semantics who did major duty thinking up smart catch phrases to kid the public during the New Deal era. The phrase "excess profits tax" conveys, to the casual segment of the public, the idea of cream skimming and penalizing profiteers and black market operators who have no claim on anybody's sympathy, especially in the pocketbook department. But actually the "excess profits tax" as it was practiced during the war and as it is likely to be revived during the "re-Deal" Congress *is a blockade against industrial expansion with corporate revenues.*

There is nothing "excess" about it, as far as actual profits in terms of present-day volume of business operations is concerned. A more honest term would be "strait jacket tax" on earnings, instead of "excess profits tax." Here is why: The bill being drafted by Representative Dingel (D., Mich.), who will be the prime mover of this new tax if enacted, would impose a levy on all corporate profits in excess of 140 per cent of the 1935-1939 base period. This tax would begin at 50 per cent and would increase on a graduated scale to 80 per cent. As a sop to smaller business enterprise, there would be a $50,000 exemption with an additional $5,000 deductible on corporations which started in business since the end of the war.

Now, everybody in the telephone business knows, or ought to know, that there are only two ways the industry is going to raise the necessary revenue for replacing and expanding necessary plant investment, to take care of the increasing public demand for service. The first is through the sale of securities. The second is through the plowing back of corporate earnings into the plant.

Anybody who has taken the trouble to look at the recent performance of utility common shares on the stock market knows very well that the cost of raising new capital through the flotation of new security issues is becoming prohibitive. Therefore the telephone industry must look more and more to its own resources; namely, corporate earnings to take care of new plant investment. And now Representative Dingell and his merry band of "re-Dealers" are out to cut off this source of financing—which simply puts the industry in a strait jacket.

Put it another way. If the policy of the new administration is going to be a discouragement of all profits in excess of 140 per cent over earnings during the limited operations of the 1935-1939 base period, then industry will have to scale its operations, including plant investment, back to that level—as its present plant wears out and replacement cannot be financed at present high prices. It is up to the administration to decide whether it wants this country to have its cake (in the form of increased business operations to take care of the gigantic postwar public demand) or eat its cake (in the form of taxes and let the public go hang).

The businessman's answer to this disturbing state of affairs must be in the form of courageous reaction. There are some business leaders who are talking about surrendering and throwing up the sponge in the front of the numerous onslaughts by anti-business and socialistic forces. Without naming names, there are some business leaders who have actually suggested that industry halt its attack on unwise and punitive legislation and that business groups generally should cut down or cut out industrial information and advertising programs, as a response to the "people's mandate" at the recent election.

But, actually, the election ought to furnish a good answer for any such faint-hearted leaders in the business field. They can copy a page right out of organized labor's book. When extreme pro-labor congressmen were defeated right and left in the 1946 election and when the so-called "slave labor" Taft-Hartley Act was passed by the 80th Congress over the veto of President Truman—did the union leaders give up, surrender, or disband their lobbies? Did the farmers' lobby throw in the towel in opposition to the consumer's demand for repealing the oleomargarine tax last year? Did the real estate group give up on housing legislation?

They did not. They stayed here in Washington and fought it out. It would be a poor sport who would not admit that organized labor in particular carried on a brilliant and courageous battle to elect sympathetic politicians early last month. Business can do the same in 1950. The situation calls for more, not less, effort—more, not less, support of constructive legislative activity—more, not less, education of the public as to the needs of American industry in the public interest.

All this talk about a "people's mandate" is simply a political camouflage for various special interests with particular axes to grind in the 81st Congress. The so-called "people's mandate," like the cloak of charity, is going to cover a multitude of real economic sins, if the sentinels of the business community are not wide awake and on duty when the whistle blows to open the next Congress.

A very slight majority of the people voted on Nov. 2 to re-elect President Truman for a various number of special reasons—some quite conflicting. The farmers wanted continued high prices, and Truman promised they would have them. The housewife wanted lower prices, and Truman promised she would have them. The labor unions wanted high wages and freedom from all restrictions, and Truman promised they would have them.

Obviously, no people's mandate is broad enough to encompass any administrative program which attempts to dash off in so many different directions at the same time. The plain duty and responsibility of the American businessman in Washington today is to rub the noses of the congressmen right into the bare facts of simple addition and subtraction. These different things simply don't add up. Until Congress and the public face the realistic economic conditions of the present, the business community must resign itself to a lot more vaporous talk about the so-called "people's mandate."

"Original Cost" Chickens Come Home to Roost

Glancing back over various reports and addresses of the sixtieth annual convention of the National Association of Railroad & Utilities Commissioners, held in Savannah, Ga., one gets the distinct impression that the state commissioners are beginning to feel uneasy about the "original cost" theory of utility rate base valuation which the Federal Power Commission has been so assiduously trying to cultivate and indoctrinate among the state commissions over the past decade. True, none of the state commissioners went so far as to suggest that the original cost basis for either rate making or depreciation should be thrown overboard. Yet one senses, in reading these thoughtful documents, that the specter of inflation appeared like Banquo's ghost at every serious consideration of present-day problems of rate determination.

What else, for example, could the NARUC committee on rates of public utilities have in mind when it stressed, in its report, that the machinery of regulation must be geared to the present-day demands for telephone service. This committee report recognized the inflationary spiral of wage demands and price increases on postwar plant replacement, along with a decline in earnings resulting from subsequent investments in plant at prices approximately double those of the prewar period. The committee report stated that "there is an inevitable lag between investment in large units of additional capacity at higher prices and the consequent reduction in earnings." The report continued:

"Demands upon telephone companies for additional service and replacements to supply the deficiencies that accumulated during the war have resulted in budgets for plant additions larger in proportion to prewar investment than for any other type of public utility. To date, the greater portion of planned additional facilities are yet to be constructed. With present prices for materials and labor, these additions, when completed, will increase materially the investment per subscriber and, even after allowance for reduction in operating labor where conversions from manual to automatic switching are made, there will be a consequent reduction in earnings if present rates are maintained."

The economic problems posed by this steady deterioration in the purchasing power of our currency have given food for thought in several fields other than public utility regulation. Even the humblest citizen may get a back lash from this economic development some years hence, if not sooner.

Thus, President Truman says he is going to increase social security. By this he means that a larger amount will be withheld from the employe's pay check, and that the employer will be asked to match the amount. Mark Sullivan, New York *Herald Tribune*

(Please turn to page 60)

telephony's *SAFETY* bulletins

No. 9—A common tool used by telephone people is the soldering iron. Why take a chance on being branded by a hot iron? Read this bulletin; then make a safety check on the use, care, and maintenance of this tool.

by FRANK E. LEE

IT'S hot! Yes. It's hot! Just a touch will sear the skin. It could blind you for life. If this tool is used improperly you may lose one eye and maybe both, all because of carelessness.

It carries dangerous electric current. Without proper care this tool can deteriorate to a point where it becomes a possible menace.

Still, thousands of telephone men need and use this tool many times in their everyday work.

What is this tool?

That's right. It's an electric soldering iron. Just an ordinary electric soldering iron.

What accident hazards does the electric soldering iron present?

First is personal safety.

Always remember an electric soldering iron is hot. To find out how hot the iron is, or to determine if the iron is hot enough to melt solder, make a test with a piece of solder held against the tip. Avoid holding the iron near the face or hand to feel the heat. Actually, heat is a relative condition, and the only way to determine if an iron will melt solder is to test it with a piece of solder.

Working position is another important factor in the safe use of the soldering iron. When soldering, it is well to have the face above the work. Reaching up to solder overhead is bound to lead to an accident caused by hot solder or other objects falling into the face.

When using the iron to solder a wire connection, keep the hand clear of the tip and heating element. This means that at least two inches of every piece of wire solder should be considered as a handle. When only the handle portion remains, place the solder in the salvage box and get a new piece. Costly burns will be avoided.

Hot solder will fly off the tip of an iron at the slightest jerk or sudden movement. Avoid the accumulation of excess solder on the iron tip. Use a heavy rag to wipe off excess solder. Flipping the solder from the tip is dangerous. The molten metal may get into the eyes or ears, or it may injure someone who may be in range. This article is written only from the safety standpoint, and no attempt will be made to outline the circuit failures that may be caused as solder bounces and splatters over a cable terminating frame or an equipment bay.

Keep the tip anchored in the element. This will prevent painful burns should the tip suddenly slip from the iron and an attempt is made to catch it before it falls.

At regular intervals inspect the cord, plug, and handle of the iron. A worn cord or defective plug could result in a severe electric shock. A cracked or splintered handle can tear or puncture the skin with the resultant possibility of infection.

Observance of all the factors involved in personal safety in the use of soldering irons will enhance the safety of others who may be in the immediate vicinity. In addition, avoid soldering over the heads of persons who may be standing or working below.

This iron belongs in a holder or rest.

Avoid handing a hot iron to another person. If the iron should slip and an attempt is made to catch the handle someone may take hold of the element or tip and receive a severe burn. The safe procedure is to place the iron in an approved holder or rest. Then the handle can be grasped firmly when the iron is required.

A hot soldering iron will ignite combustible material. The only way to eliminate this fire hazard is to place the iron in an approved holder or rest when not in use. This means every time the iron is set down for any reason. When the iron is to be left unattended, or its use no longer is required, disconnect the plug from the electric socket. Where multiple installations in the central office are connected to a master switch, throw the switch during the noon hour, at night, or whenever irons no longer are required. This suggestion is offered for these reasons:

(1) Prevention of fire.

(2) Reduce wear of the iron. The copper tip will scale, carbonize, and lose its tinning if left at peak heat indefinitely.

(3) Conservation of electric energy.

In addition to the safety facts already presented, the use

of the soldering iron in the central office requires additional safety precautions. An iron cord lying on the floor is a hazard to everyone who has occasion to walk in the equipment aisle where the iron is used. The person using the iron should keep the cord in a safe position along the base of the equipment frame. A cord parallel to the frame is less likely to cause a person to trip as compared with a cord that is lying directly across the aisle. When walking along equipment aisles, or behind switchboards in the central office building, be alert to the hazard of iron cords lying on the floor.

When using an electric iron on a customer's premises always remember that other people may not be aware of the accident hazards presented by a soldering iron. Especially is this true where there are small children. On the customer's premises these safety suggestions are in order:

(1) Keep the iron and cord out of the way of others.

(2) Avoid leaving the iron unattended.

(3) Small children should not be permitted near the hot iron.

Safety of any electric tool depends upon keeping that tool in perfect operating condition. Maintenance of the electric soldering iron should include:

(1) Inspection of the cord and plug. Replace or repair as required.

(2) Check the handle. Be sure it is tight and free of cracks and splinters.

(3) Keep the tip dressed and free of sharp lips or gouges. A smooth tip will slide easily from a soldering lug. A rough tip will catch and jerk which may cause hot solder to splatter over the hands and arms.

(4) Be sure the tip is anchored securely in the element housing.

All of these safety items involved in the use of soldering irons require time for planning, time for training, and time for safety follow-up. That's time well spent. Where protection of yourself and of others is concerned, YOU HAVE TIME FOR SAFETY.

Nebraska Grange Unit Plans Rural Fire Protection

The Goehner Grange, which has a large rural membership in Seward County, Neb., has completed a drive to extend its fire protection program to cover the entire county. The project, which won the Nebraska state community service contest award and is rated as one of the best in the nation, began at a weekly meeting attended by 150 men and women last March.

As a result, fire protection to every one of the 1,800 farm homes in the county is now available through the organization of a rural fire protection district with taxation powers. Under a system devised by the directors, a farmer, in case of fire, calls a number posted on his telephone. Fire trucks from two towns in that area answer and other departments are alerted to stand ready if needed. The grange sponsored a related movement to provide an adequate telephone system as necessary for complete protection.

V V

Changes in Wisconsin and Illinois Companies Announced

William T. Luck has been appointed general commercial superintendent of Commonwealth Telephone Co., Madison, Wis., and of Illinois Commercial Telephone Co., Springfield, Ill., effective Jan. 1, 1949. He will make his headquarters in Springfield.

Mr. Luck's entire business career has been in the utilities field. Upon completing his schooling, he became a ground man and, later, a meter reader, for the Southern California Edison Co. A year later he became a construction clerk with the Southern Counties Gas Co. Mr. Luck entered the employ of The Associated Telephone Co. in Long Beach, Calif., one of the predecessor companies of Associated Telephone Co., Ltd., in April, 1928, as a switchman. Thus, he has been associated with the General Telephone System for over 20 years.

W. T. LUCK

In a series of transfers starting in 1930, he worked on a heavy gang, on station and PBX installation, in the storeroom, and then became a clerk in the auditing department. In 1932, he transferred to the local plant engineering department as a draftsman, leaving there to become chief clerk in the executive department in 1934. A year later he was classified as an engineer; became a tax supervisor in February, 1937, and then transferred to the Treasury Department in 1942 as assistant special agent. In July, 1944, he became assistant general commercial superintendent, leaving to become manager of the rapidly growing West Los Angeles exchange in April, 1947.

Mr. Howard F. Moran will remain in Madison, Wis. and continue his present duties and responsibilities as commercial superintendent of Commonwealth Telephone Co.

V V

Michigan Bell Cuts 1949 Construction Program

The Michigan Bell Telephone Co., on Nov. 19, announced that it has reduced its 1949 construction program by $14,204,000, leaving only $56,300,000 to be spent on plant in that period. Thomas N. Lacy, president, explained that no company with as low a return on investment as Michigan Bell could continue to raise the necessary capital.

Although several major building projects will be postponed, the 1949 program will be second in size only to the current year. Mr. Lacy said that the company can not earn enough as a regulated utility to finance construction out of earnings and must therefore get the most of its money from investors where "we find ourselves competing with other industries having earnings substantially above our own."

Referring to the $8,200,000 yearly rate increase awarded the company early in October, Mr. Lacy said:

"It was too little and too late to offset the rising costs of doing business."

Construction costs, he added, have risen so rapidly that by the end of 1949 the company will have spent as much—$220,000,000—in four years as it had planned to spend in five years.

V V

OBITUARY

WILLIAM H. BASSETT, a telephone pioneer and a director of The Illinois Telephone Association for many years, died Nov. 21, in St. Louis, Mo.

Mr. Bassett was formerly connected with the old Kinlock Telephone Co. and later was with the Southwestern Bell Telephone Co.

MAINTENANCE TESTING EQUIPMENT

By JOHN A. BRACKEN

IN THE operation of a telephone system, it is most important to have all the subscriber lines and other circuits well insulated, so that the equipment operating currents will only flow in the paths desired. Therefore, in order that the various kinds of electric current used in the operation of the system may function properly, the parts of the circuits, across which the EMF is applied, should be well insulated from each other in order to prevent loss of current as leakage, or possibly a complete breakdown in the form of a short circuit or a ground.

It may be said that all substances will conduct an electric current if sufficient EMF is applied, but the degree to which some materials conduct current, as compared to others, is quite different. For instance, the opposition offered by a piece of copper line wire to the passage of an electric current is considerably less than a piece of glass of equal dimensions.

As a result of the difference in electrical conducting properties, most materials used in the operation of a telephone system are grouped into two principal classes, namely, conductors and insulators.

A conductor may be defined as a wire, or combination of wires, suitable for carrying an electric current, and which may be bare or insulated.

Since the amount of leakage from a system of telephone circuits depends on the equipment connected thereto, which represents so many paths for leakage currents, it is of great importance to increase the resistance in these paths, so as to diminish such currents as much as possible. In other words, this means that the resistance of the insulation material of all the equipment connected in a circuit should be as high as possible.

An ideal condition would be to have perfect conductors of electricity protected by perfect insulation. But unfortunately, for all practical purposes, neither is obtainable, since all conductors have resistance and, under certain conditions, most insulators really are inferior conductors.

The result is that, because of certain atmospheric conditions, especially in the case of open wire telephone line circuits, there is usually current leakage on a line. Because of this, it is very essential that the insulation of the conductors be kept at a certain high standard and not allowed to become in any way faulty, because such faults may impair the efficiency of the entire system.

PART XII. The preceding article in this series appeared in the Oct. 9 issue, page 17.

It is a comparatively simple matter to insulate open wire telephone line circuits by suitable insulators, such as glass, porcelain, rubber, dry air, etc. With dry air and glass as insulators, for example, it may be assumed that under favorable weather conditions satisfactory insulation of a line circuit at the different points of support is assured and that the line wire forms the only path for the current.

However, in foggy, damp or rainy weather, the glass insulators, pins, crossarms and poles become covered with moisture, and with moisture being a conductor, the leakage of line current over the surface of the insulator may be considerable. In this way a new path is provided for the current at each line wire support, where the amount of leakage will be proportional to the length of the lead, and number of insulators and poles.

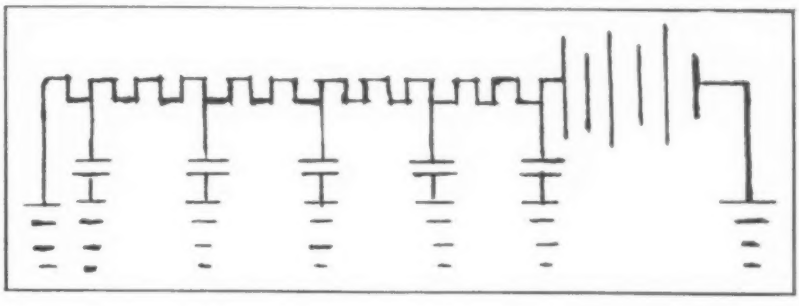
In certain types of glass insulators, the leakage of current over the surface of the insulator is reduced to a minimum by the insulator being so designed that a portion of the surface at the bottom of the glass is shielded from rain or mist—the only appreciable leakage of current from the line wires being through branches of trees and other objects which happen to touch the wires.

The resistance of a line wire itself, is not materially affected by the weather as the wire still forms the easiest path

(Please turn to page 34)

CORRECTION

The explanatory statement given in the second paragraph in the second column on page 28 of the Sept. 11 issue of TELEPHONY, relative to the capacitors shown in Fig. 4 on page 27, describes the condition illustrated in the accompanying drawing, in which a direct connection to ground is represented at the left hand end of the circuit. Because of an error, this connection was not shown in Fig. 4 in the Sept. 11 issue.



When considering the original Fig. 4 circuit drawing, it is obvious that the voltage drop values as indicated in Fig. 4 do not occur because of the fact that no circuit is flowing through the line to ground at the distant end from the 30-volt battery. However, current will flow into the capacitors until each one charges to the value of the EMF across its terminals.

from a practical investment

look at these advantages of Leich's 86 magneto telephone

The money you invest in Leich's 86 magneto telephone is wisely spent. Tens of thousands of these modern magneto telephones are now in service. Re-orders come in every day, indicating that other magneto operators have found this telephone a practical investment.

Excellent transmission and reception are guaranteed, even on long, heavily loaded rural lines. The Leich Alnico generator is universal, can be used to replace all former 3, 4, and 5-bar generator models. The attractive, modern styling appeals to both city and farm subscribers.

The Leich 86 is a complete magneto wall telephone with the exception of the batteries. It can be readily separated into a desk set and generator box, using the same parts, same housing.

Deliveries on this popular magneto telephone are now being made promptly. Why not try one and see for yourself.

Complete listings of Leich's line of magneto telephones, including the No. 86 telephone described above. It's yours for the asking. Write Leich Sales Corporation, 427 West Randolph St., Chicago 6, Illinois.

Do you have this Catalo

...andpoint-

Attractive all-Bakelite case

Capsule type transmitter and receiver

Same housing for wall or desk models

Alnico generator replaces all 3, 4, and 5-bar models

Excellent transmission, even on long, heavily loaded lines

...atalo... **Leich**

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

for the current. The resistance of insulating material used in the line construction (called the insulation resistance), being that resistance offered by an insulating substance to an impressed direct EMF, is affected by the weather as previously stated. The resistance of the separate paths formed by moisture on the insulators is very high, and the paths are in the nature of derived circuits that form parallel, shunt or multiple circuit, as shown in *Fig. 1*.

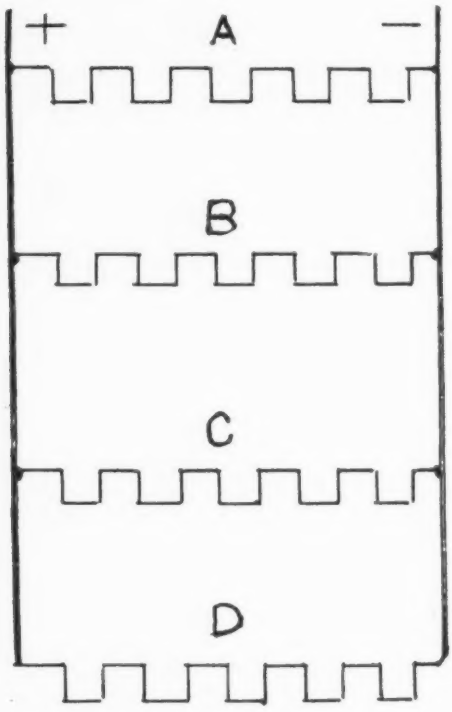


Fig. 1

Adding conducting paths to a circuit is really equivalent to increasing the cross-section of the imaginary conductor formed by all the conductors in parallel between the two sides of a circuit and acts to reduce the resistance of the circuit.

Fig. 2 shows a water analogy of a derived electrical circuit. From this it is evident that as the branch pipes A, B, C and D are joined in parallel between the main pipes P1 and P2, the opposition to the flow of water between pipes P1 and P2 will be decreased.

A similar decrease in opposition to the flow of an electric current occurs when electrical conductors are connected in parallel between two main conductors so as to form a derived or multiple circuit.

In the case of wet open wire lines, the current divides at each insulator inversely as the respective resistance

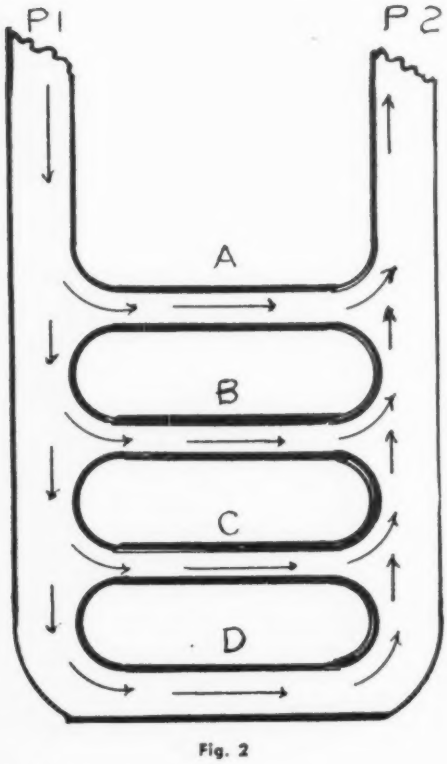


Fig. 2

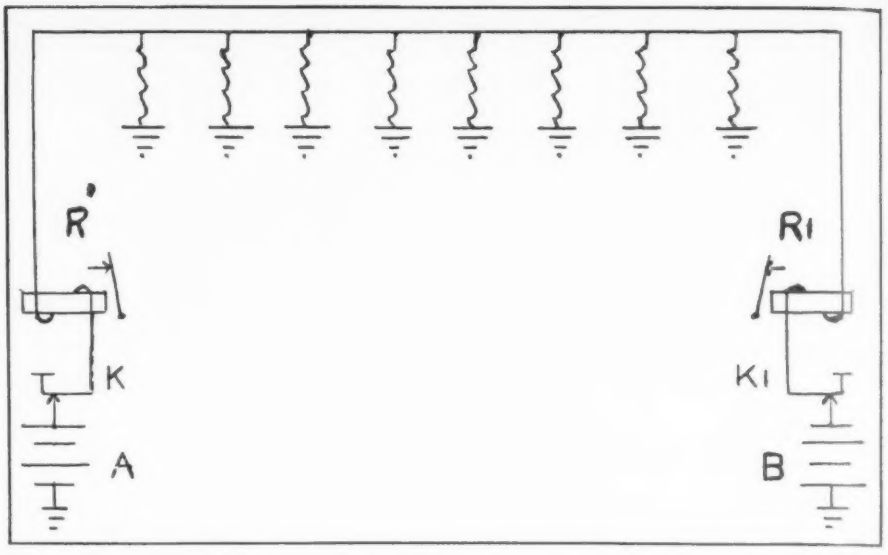


Fig. 3

of the line and multiple circuits between and the short leakage paths down the poles to ground. Perhaps this can be explained by studying *Fig. 3*, which shows a circuit containing two batteries, two keys, two relays and an open wire line having numerous leakage paths to earth. The resistance of the entire circuit is greatly reduced by the large number of parallel leakage circuits introduced, and the output of current from batteries A and B is increased in proportion, causing a greater electro magnetic attractive force betwen the cores and armatures of relays R and R1.

Suppose that the key K1 is opened, or the line is disconnected, as shown in *Fig. 4*. The circuit of battery A is not broken, but is still complete through the multiple circuits (leakage paths to ground), with a break at key K1: or in the opened line wire which disconnects battery B from the circuit, relay R

(Please turn to page 62)

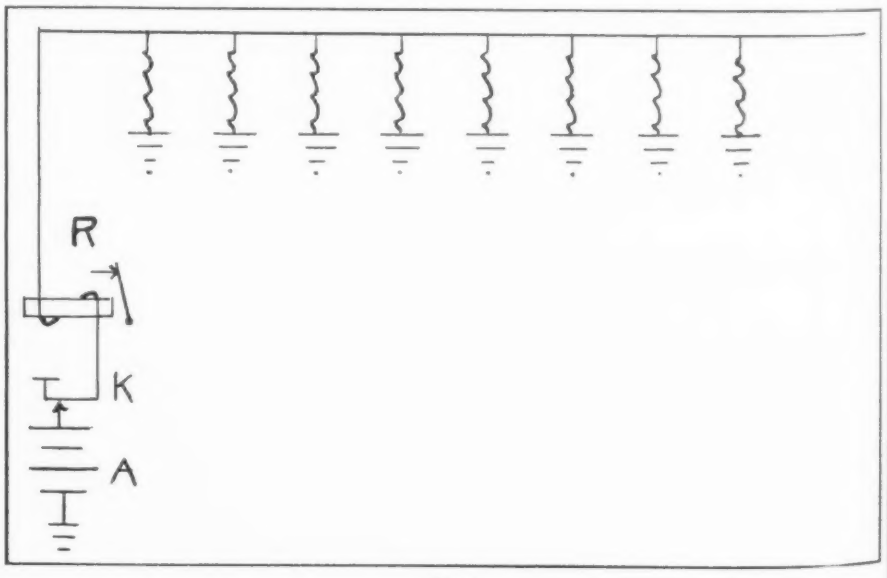


Fig. 4

Mellinger Succeeds Hopley As Civil Defense Director

Following the submission of its report by the Civilian Defense Planning Commission (TELEPHONY, Nov. 27, page 17), Russell J. Hopley, its director, has resigned and has returned to his duties at Omaha, Neb., as president of the Northwestern Bell Telephone Co. Since March 5, he had spent most of the intervening time at Washington developing the program.

He has been succeeded by Aubrey Mellinger, chairman of the Chicago Plan Commission, and former president of Illinois Bell Telephone Co.

V V

USITA Sets Rules for Honorary Membership

The United States Independent Telephone Association has prescribed a set of general rules of eligibility governing the issuance of honorary memberships in the association to individuals who have had 50 years or more service in the Independent segment of the telephone industry. The board of directors of the association, on Oct. 11, voted to authorize the officers, as an administrative matter, to award such certificates of honorary memberships.

The rules adopted by the association are as follows:

(1) The applicant must have served at least 50 years in the Independent branch of the telephone industry.

(2) The applicant at the time of submitting application must still be in the service of an Independent telephone company or an Independent telephone manufacturer. Service as a member of the board of directors of a USITA member company cannot be counted.

(3) Service with a Bell company cannot be considered in computing the 50-year period.

(4) Time spent in the service of the military or naval forces of the United States in time of war will be considered in computing the 50-year period.

The association announces that it will furnish application forms to persons desiring to apply for honorary membership certificates. Requests for the necessary blank should be addressed to the association at its office in Washington.

V V

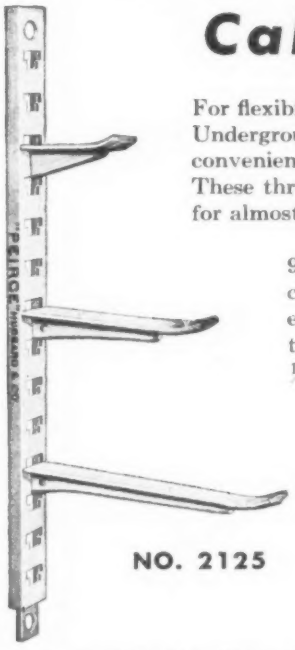
C. A. Bixler Leaves Industry

C. A. Bixler, who started a 35-year career in the telephone business as a lineman and has been manager of the Hanover and Gettysburg, Pa., districts of the United Telephone Co. for the last seven years, has resigned from that post to accept a position as fruit buyer for the C. H. Muselman Co.

JOHN LINEMAN OFFERS..

PEIRCE

Underground Cable Racks



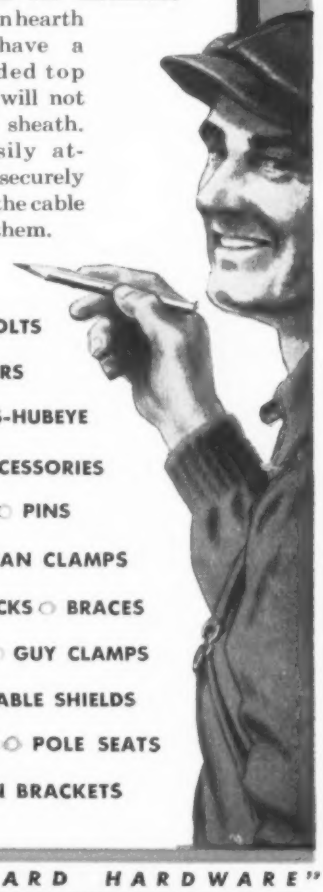
NO. 2125

For flexibility and ease of installation, Peirce Underground Cable Racks are made in three convenient lengths: 15, 24, and 30 inches. These three basic sections may be combined for almost any desired length.

Sections are made from 1½ by 9/16 by 3/16-inch open hearth steel channel and will support the heaviest cables. Racks are fastened to the manhole walls by means of a ½ by 4-inch Peirce Expansion Bolt.

Hooks adaptable for insulators and cut from open hearth "T" sections, have a smoothly rounded top surface which will not injure the cable sheath. Hooks are easily attached and lock securely when weight of the cable is placed upon them.

A. T. & T. Co. Standard



ALSO— HUBEYE NUTS ○ HUBEYE BOLTS ANCHORS, PLATE AND SCREW ○ MANHOLE LADDERS BRACKETS, POLE, CORNER AND HOUSE ○ EYE BOLTS-HUBEYE CARRIAGE BOLTS ○ CROSS ARM BOLTS ○ GUYING ACCESSORIES CABLE SUSPENSION HARDWARE ○ POLE BALCONIES ○ PINS STORM GUY ATTACHMENTS ○ SIDE-WALK GUYS ○ SPAN CLAMPS LAG SCREWS ○ MESSENGER DEAD ENDS ○ CABLE RACKS ○ BRACES DRIVE HOOKS ○ EXTENSION ARMS ○ POLE STRUTS ○ GUY CLAMPS POLE STEPS ○ STUBBING BANDS ○ STRAIN PLATES ○ CABLE SHIELDS GUY PROTECTORS ○ GUY HOOKS ○ MACHINE BOLTS ○ POLE SEATS GRADE CLAMPS ○ GROUND RODS ○ TRANSPOSITION BRACKETS

"HANG THE LOAD ON HUBBARD HARDWARE"

HUBBARD AND COMPANY

ESTABLISHED 1843

PITTSBURGH CHICAGO

OAKLAND, CALIFORNIA

THE PLANT MAN'S *note book*

BY RAY BLAIN TECHNICAL EDITOR

A FRIEND of the writer claims that he has perfected a design for a successful clamped type cable joint. This, in his opinion, will eliminate the necessity of the wiped joint so that good splicers can be trained in a much shorter period than is now required. We hope that he has the answer, for many attempts have been made in the past to accomplish this, but, to the best of our knowledge, none has proved entirely successful. Although the plumbing trade eliminated the wiped joint years ago, the telephone industry has, for some reason, clung to the old-fashioned lead dauber.

• • •

It has been said: "The man who rows a boat generally doesn't have time to rock it."

• • •

C. A. Swoyer, Columbus, Ohio, sends us an ad, clipped from a Lima, Ohio, newspaper which describes a slip-on towel fashioned somewhat like a robe. The advertisement states: "Ever get 'caught-short' in the tub . . . phone ringing like mad and no one in the house to answer—well here's your answer—the slip-on turkish bath towel. Slip it on and you're dressed . . . or at least protected while you answer the phone or door!"

• • •

Buildings are generally constructed from the ground up, but when the Mountain States Telephone & Telegraph Co. got in a hurry to install equipment on the third floor of its new Phoenix, Ariz., telephone exchange the contractor accommodated them by finishing the top floor first.

The steel and concrete framework started from the ground up, but the brick walls were placed on the third floor first.

• • •

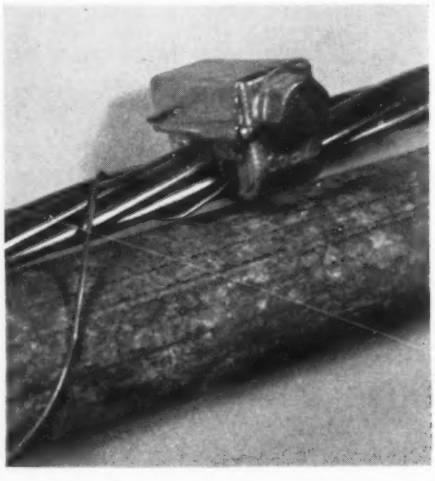
We are in receipt of a letter from George H. Young, of the Green (Kan.) Telephone Co., in which he comments on an item which appeared on this page in the Aug. 28 issue concerning the butt treatment of old poles. His letter states in part as follows:

"A very good way to butt-treat old poles is by the use of an old hot water tank. Cut off one end of the tank and bury it about half in the ground at a proper angle. With a little practice, a person soon learns the proper amount of preservative to use. Place the pole in the tank, give it a turn, then pull it about half way out and let drain while another pole is being prepared for similar treatment."

The above suggestion appears to be a very good idea and well worth trying.

• • •

Recently we received a report to the effect that several operating companies have started the use of .045-inch stainless steel wire to suspend smaller sizes of cables by the lashing method instead of the usual .091-inch wire. This wire is used in a modified spinner and probably its primary purpose is to overcome the necessity of reloading the spinner each one or two spans. Our report does not state how many spans can be covered without reloading



with the smaller wire, but it is assumed that at least twice the distance can be covered as compared to the larger wire. It is believed, also, that the economy of the smaller wire is an important factor.

With the larger type lashing wire, a vice-type power connector was used in some cases to fasten the end of the wire to the strand at poles. When the size of the lashing wire was decreased to .045 inch, it was found that the wire would lay in the grooves of the strand and necessary holding power could not be obtained at the clamp. To overcome this difficulty, the Fargo Mfg. Co. has developed a special clamp which is used as indicated in the accompanying photograph. This new clamp introduces a pressure bar between the strand and the lashing wire and with normal wrench torques by workmen, it will hold the lashing wire on a direct pull-out up to its rated breaking strength.

• • •

The writer numbers among his acquaintances several telephone engineers who have been on the retired list for many years. All these men are now working and in many cases earning more pay today than they did in their so-called "prime." One of these engineers worked 33 years on his first job and now has nearly 15 years to his credit on his present one.

We often wonder if perhaps the first employers did not make a mistake in releasing these men when they did, especially in view of the fact that most manufacturers and operating telephone companies admit a shortage of trained engineers. Certainly these old boys are of greater value than the average student engineer proves to be during his first ten years of service. The health of these men is all good and on an average they spend more days on a job each year than do many younger men.

These old timers assign various reasons for taking a new job after retirement. With rising prices, some found they could not live in their accustomed manner on their retired pay. Others get a kick out of doing a different type of work. In some cases, they tried for years to get transferred to a different type of work, but were doomed to their specialty by a company which had no

desire other than having them be a useful cog in an efficient machine. Others have made telephone work their life's hobby and admit that they feel lost without a job where they can keep in touch. Despite the various reasons cited, all of these men have proved a mighty good investment for the second employer.

• • •

We recently have learned of a new protective coating in roll form, created specifically for the protection of lead sheathed cables. Since the introduction of lead sheath for the covering of cable, corrosion has been a problem, increasing in severity by the chemical action of the cement-type manhole construction.

The action of calcium hydroxide, formed by the combination of free lime in cement with water, has been severe on the lead sheath and particularly so on tin in solder at joints. This new tape claims to furnish a protective coating plus a wrapper all in one. The tape may be applied by one man without any special skill or training. It is spirally wound, with one-half inch overlap, directly around the cable. The possibility of exposed, unprotected areas from hand or brush application is eliminated. Because this tape is water repellent, it is claimed to guard against penetration of calcium hydroxide. Its corrosion inhibitive qualities provide a protective film which keeps the cable free from pitting. The past-like consistency of the wrap provides a good bond.

PLANT MAN'S QUIZ

Q. When an operating telephone company provides a tone warning device for a customer's telephone recorder, is it the responsibility of the telephone company to make the connection of the recorder to the tone warning device?

A. The use of authorized telephone recorders is so new that questions of this nature are most difficult to answer. One type of recorder connector (tone warning device) mounts a cannon SK-M7-32S male receptacle for use as an outlet for connection to the recorder and power supply by means of a female connector and cord. This cord is not a part of the recorder connector unit but is considered a part of the recorder. The common receptacle provides for power intake of 105 to 130 volts, a shielded pair for the voice connection to the recorder and a pair for control.

Power must be furnished the recorder connector and the control switch must be operated to close the plate switch before the recorder can be connected to the telephone line and the tone started.

It is believed that the plug cord and connection to commercial power supply and recorder should be supplied by the customer. The various recorder manufacturers may indicate several different methods whereby this may be accomplished.

Various different types of cords will probably be available and used by the recorder manufacturers in making connections by the use of a cannon SK-M-7-21C ½-in. plug to the recorder connector. One such cord manufactured by The Whitney-Blake Co. is designated by them as the SRC-6 cable. One type recorder connector requires about one minute's warm-up time while another type 20 to 30 seconds.

• • •

Q. We have experienced some difficulty occasioned by customers on a dial rural line removing the receiver during the dialing operation of another customer. This practice, of course, results in wrong numbers being dialed. Is there any way of preventing this type of trouble?

A. Telephones used on these lines may be equipped with a push-to-dial or talk switch. This switch provides two step operation. The first step bridges the receiver across the line which permits parties to listen-in in order to determine whether the line is already in use.

The second step connects the transmitter into the circuit for normal use. This arrangement should correct your difficulty if subscribers can be educated in the proper use of the switch.

• • •

Q. What type aluminum wire is used for suspending cable by the spinner method?

A. Alloy spinner wire of .091 in. diameter has good strength characteristics with an ultimate tensile strength of 197 pounds minimum load. This figure is obtained by using the minimum tensile requirements of 31,000 pounds per square inch for this specification on wire. This wire shall withstand, without fracture, wrapping about a cylindrical mandrel having a diameter equal to the nominal diameter of the wire under test. In the test, five or more turns of the wire shall be wrapped about the mandrel in a close helix at a rate of approximately 15 turns per minute.

One authority states that from the viewpoint of resistance to corrosion, aluminum alloy spinning wire will give at least as satisfactory service as would galvanized steel wire. In many localities where the zinc coating on the galvanized wire would not have a long life, aluminum alloy is claimed to have considerably greater resistance to corrosion than galvanized steel wire.

• • •

Q. Will it be possible for us to procure a saw that can be used to cut multiple clay conduit accurately?

A. Power driven masonry saws may be successfully used for this purpose. This type of saw is easy to operate and gives amazing results. In order to operate, it is necessary to hold the conduit to be cut firmly against a back stop on a conveyor cart. Operation of the conveyor cart carries the conduit back and forth freely under the cutting disc in a rhythmic manner, gradually deepening the cut by applying pressure with foot, making numerous shallow cuts.

• • •

Q. We are planning to install a second crossarm and additional circuits on an existing pole line. The poles are good, but we do not trust the holding power of log anchors which have been in service for a considerable number of years. Is there any method whereby these anchors may be tested to make certain that they will hold the additional load of the second crossarm when installed?

A. There is no method of testing which we can recommend for proving the holding power of the old log anchors. About the only thing you can do is to dig up one of these anchors and inspect it. If this one anchor proves to be all right, and they were all installed in the same manner, then they may be considered satisfactory.

It is our opinion, however, that the best plan is to replace all log anchors with a modern type. This action will not prove overly costly and may prevent a line failure because of a log anchor releasing under storm loading later.

V V

>> Telephone Operator: "One who is always plugging for somebody."

LATEST DEVELOPMENTS HOLD *Interest of Floridans*

By H. D. FARGO, JR.

SARASOTA, circus winter headquarters, was the site of the Florida Telephone Association convention on Nov. 8 and 9. An attendance of 230, representing 12 of the 21 Independent telephone companies in Florida, gave evidence of the keen interest in the convention program and the desire to be posted on latest developments.

The Peninsular Telehone Co. acted as host company and was ably represented by its Sarasota manager, Taylor C. Scott. At the directors' meeting the following officers were elected to serve for the ensuing year: President, P. M. Schuchart, Southeastern Telephone Co., Tallahassee; first vice president, J. Fred Hosea, Inter County Telephone & Telegraph Co., Ft. Myers; second vice president, J. L. McGehee, West Florida Telephone & Telegraph Co., Marianna, and secretary-treasurer, Miss Josephine Poppleton, Peninsular Telephone Co., Tampa.

All directors were re-elected with the addition of one new member, Paul Brannen, Inter-County Telephone & Telegraph Co., making a total of 20 directors to serve for the ensuing year. Other directors are: C. E. Archer, Tampa; M. L. Barre, Jacksonville; H. A. Bishop, Starke; Carl D. Brorein, Tampa; E. L. Cox, Perry; A. B. Dooley, Jacksonville; Mrs. Allene Drew, Quincy; B. A. Galloway, Winter Park; J. K. Galloway, Winter Park; Mr. Hosea; Frank G. Jolley, Jr., Tallahassee; Ralph Maner (representing manufacturers), Tampa; Mr. McGehee; Miss Poppleton; Mr. Schuchart; J. L. Sharit, Port St. Joe; Max Wettstein, Ocala; Otto Wettstein, III, Ocala, and M. P. Willis, McIntosh.

At the general session, with President J. K. Galloway presiding, Col. Walter B. Larew, Army representative, Air Navigation Development Board, Washington, D. C., was the first speaker, using as his subject "Requirements for Telephonic Communications in Air Navigation and Traffic Control." This was a most instructive address, made more interesting by the use of lantern slides.

The speaker told of the organization of the Air Navigation Development Board (ANDB), as the result of an inter-agency agreement between the Secretary of Defense and the Secretary of Commerce, whose responsibility it will be to develop a system to meet the needs of military and civil aircraft. Telephonic facilities for transmitting instructions and reports, also for connecting the General Control Area Office to the individual navigational aid and traffic control installations will be required.

Discussing the quality of the required circuits, the required miles of circuits and the costs of the telephonic facilities for the various phases of in-

Officers and directors of the Florida Telephone Association. FIRST ROW, left to right: OTTO WETTSTEIN, JR., Ocala; H. A. BISHOP, Starke; JOSEPHINE POPPLETON, Tampa; M. P. WILLIS, McIntoch. SECOND ROW, left to right: J. K. GALLOWAY, Winter Park; P. M. SCHUCHART, Tallahassee; A. B. DOOLEY, Jacksonville; MRS. ALLENE DREW, Quincy; J. FRED HOSEA, Fort Myers. THIRD ROW, left to right; RALPH MANER, Tampa; C. H. GALLOWAY, Winter Park; MAX WETTSTEIN, Ocala; M. L. BARRE, Jacksonville; J. L. McGEHEE, Marianna; OTTO WETTSTEIN III, Ocala.

Speakers at the Florida convention included, left to right, S. R. RYAN, director of the telephone division, Florida Railroad and Public Utilities Commission; J. G. BRADBURY, Atlanta, Ga.; R. A. GANTT, New York City; COL. WALTER B. LAREW, Washington, D. C.

stallation, Colonel Larew stated, "A subcommittee, of which D. K. Martin of the Bell Telephone Laboratories was a member, prepared information pertaining to these features for inclusion in the report.

"The implementation of the common system is divided into two programs. One is the transition program, lasting for five years; the other, the ultimate program is to be completed insofar as research and development is concerned in about 10 years, with complete implementation in about 15 years. The sub-committee made estimates of the number of miles of circuits required for interphone and teletypewriter services and the cost thereof for each year, beginning in 1948 and ending in 1953, the terminal date of the Transition Program. In addition, it made estimates of the number of teletypewriter stations which need to be added during the Transition Period and the costs thereof.

"The total cost per year for interphone and teletypewriter rentals will increase from $4,798,650 in 1948 to $7,523,280 in 1953. One hundred and eighty teletypewriter stations, with an average of three teletypewriters per station including standbys, will be added during the next five years at a cost of $647,200.

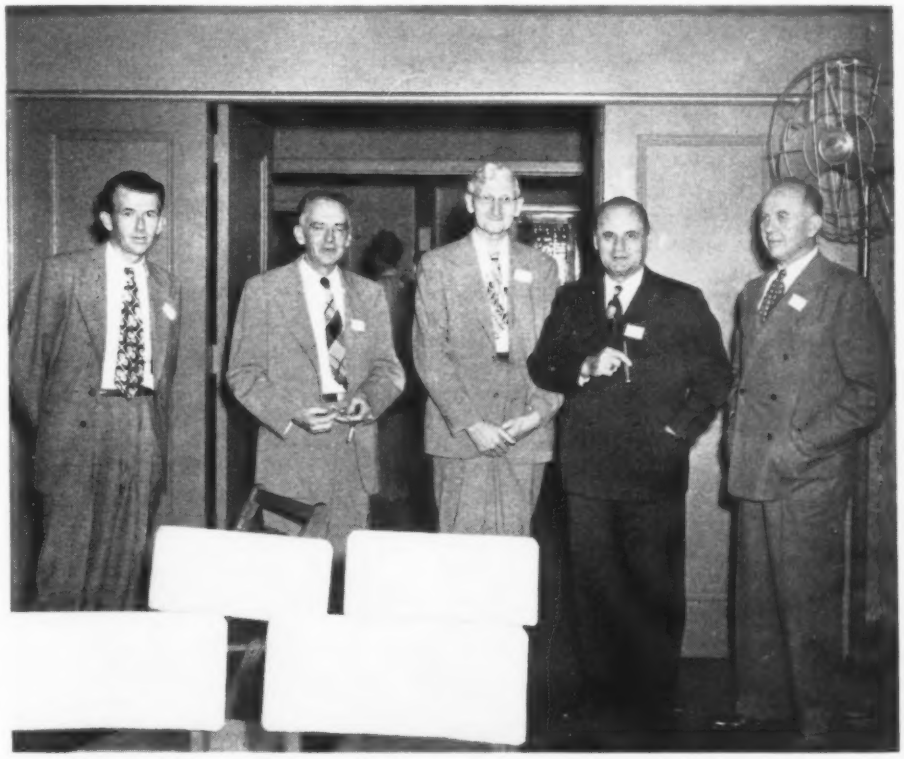
"The sub-committee estimated that the costs for wire communications after the five-year period will remain about the same as for the fiscal year 1953 until the circuits are replaced by those connecting the General Control Area Offices with one another and with the ODR-DME-Traffic Data Relay Equipment installations.

"I believe it is obvious that high-quality, broad-band circuits are required in the Ultimate Program to transmit the reports of the identities and positions of several aircraft, transmit instructions to the aircraft, transmit requests from the pilot to the General Control Area Office, and transmit the air situation display information to the pilot, particularly when all this information with the exception of pilot requests is to be transmitted every few seconds. Full discussion of the detailed specifications for these channels are available in the SC 31 report for those who have need of them.

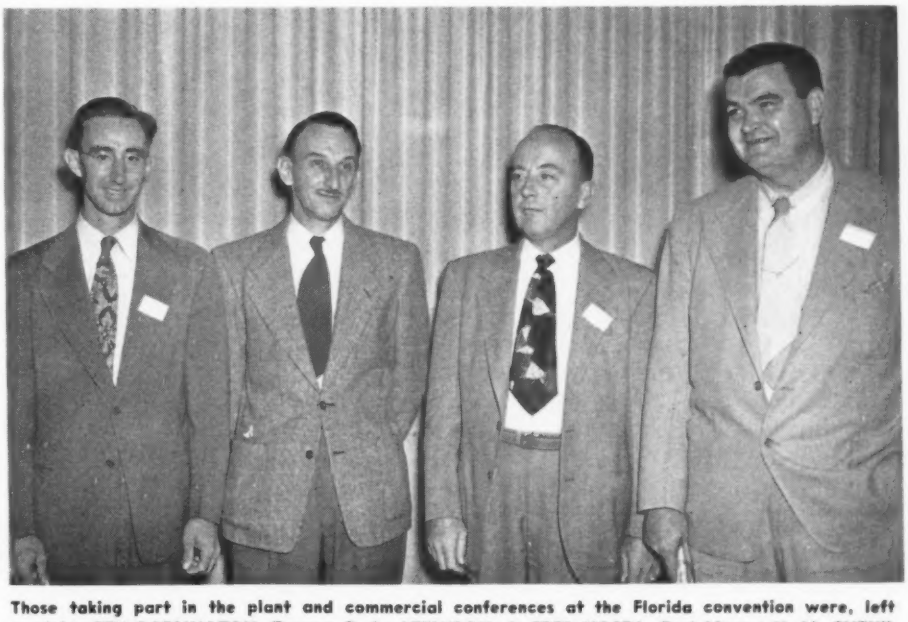
"The sub-committee also estimated that 25,000 miles of point-to-point circuits would be required for implementation of the Ultimate System.

"In concluding my discussion, I realize that I have not been specific in providing you with the requirements for telephonic communications in air navigation and traffic control, except to the extent of providing estimates of the miles of circuits required and the costs thereof for the next few years and of providing a general estimate of the miles of circuits required in the Ultimate Program. However, it is hoped that the discussion concerning the Ultimate Program will help you in a general way in making plans for additions to, and extensions of, your systems. I am certain that you will be provided with more specific and accurate data as the work of the Air Navigation Development Board progresses and the details of the air navigation and traffic control system become more clear," Colonel Larew stated.

J. G. Bradbury, Atlanta, Ga., operating vice president, Southern Bell Telephone & Telegraph Co., spoke on "Problems Mutually Affecting Telephone Companies." Mr. Bradbury emphasized the need for an early solution of finance problems. "What about telephone service for the thousands of people now on the waiting list in this state?" he asked. "Both those who want a higher type service than they now have and those who have no service at all? Here we come face-to-face with the problem of costs, not particularly



In this group photographed at the Florida convention are, left to right, MAX WETTSTEIN, Ocala; PAUL BRANNEN, Fort Myers; OTTO WETTSTEIN, JR., Ocala; CARL D. BROREIN, Tampa; R. A. LUMPKIN, Mattoon, Ill.



Those taking part in the plant and commercial conferences at the Florida convention were, left to right, BEN DARLINGTON, Tampa; R. L. ATKINSON; J. FRED HOSEA, Fort Myers; N. M. SHENK, Tampa. M. L. BARRE, Jacksonville, was not present when photo was taken.

operating costs that are encountered in the everyday running of the business, but capital costs that must be incurred in the construction of new plant.

"How to raise the money for needed telephone expansion is a major problem facing all of us. We are a regulated industry and can't, like most industries, get much of our needed capital out of earnings. Perhaps you, too, read somewhere that last year the manufacturing industries as a whole obtained from internal sources, that is, retained earnings and depreciation reserves, 77 per cent of all new capital funds required for expansion of plant and equipment and net working capital, while in the telephone business only a very small per cent of such money was, and is, being obtained from internal sources. The great bulk of the money being used to build new telephone plant must be secured from outside sources, from people who have enough confidence in the business and faith in the future to put their money into telephone securities.

"Telephone companies throughout the country face this strange, but very real, paradox: That, in spite of the fact that business generally now is at an unprecedented *high* level, telephone earnings throughout the United States are at a dangerously *low* level. It might well be said that we telephone people now find ourselves on short rations in a land of plenty.

"The reason for the financial situation in which most telephone companies now find themselves is well known to telephone men everywhere. Briefly, it is the result of a continuing heavy demand for service which has forced the construction of plant at present day high costs of material and labor, at a time when the price charged for telephone service has not kept pace with prices charged for other services and commodities. As grave as this situation is we, as telephone people, are still faced with the problem of serving those on our waiting list, of furnishing to many existing subscribers a higher type of service than they now have, and of restoring so-called margins which in reality are only extra components of plant which are necessary to insure a high quality of exchange service and fast and reliable long distance service. It is a known fact that plant margins must be established before any major upgrading of service can be undertaken. The matter of upgrading service is a real problem with most telephone companies and we need not try to kid ourselves into believing that all party line users are satisfied with the type service they have.

"On every hand we run into the need for new plant which makes it all the more essential that the earnings of telephone companies be raised and kept at a level high enough to attract investors who are willing to put their money in telephone securities, thereby making it possible to do those things that are necessary to meet the demands of the telephone-using public. Adequate earnings to insure good and extensive telephone service is a matter that most certainly *must* be given our full attention.

"It has been said that the telephone business is a necessary monopoly, necessary because the intimate personal service which it renders must be closely integrated over the tremendous expanse of this great nation. We are a regulated business and justly so. We have, however, every right to expect to be protected against confiscatory rates, just as the public is protected against rates that are unjustifiably high.

"The industrial expansion of a community, or even a state, can be influenced vitally by the availability of adequate and dependable communication service, for if such service is lacking or insufficient in a particular area that fact will in itself be a deterrent to new business," Mr. Bradbury said.

He concluded with an assurance of the continued desire of the Southern Bell company to maintain a close and effective working relationship with the Florida Independent companies and a pledge to cooperate in the solution of all service problems.

The convention was next addressed by S. R. Ryan, director, Communications Department, Florida Railroad and Public Utilities Commission. Speaking on the subject, "Planning for the Future of Florida Telephony," Mr. Ryan told of the meeting on Oct. 4 to solve the problem of how to satisfy the service demands of 30,000 to 35,000 persons in Florida who want telephone service but so far cannot get it.

At this meeting, attended by operating companies and commission members, the major proposals were:

(1) The acceptance of a definite responsibility of each telephone company, to serve a definite known territory, which will eventually be shown on published maps. This involves the acceptance of some territory, not previously desired by the telephone company, because of the lack of potential service requirements therein, including some very sparsely settled sections of the state.

(2) Establishment of a uniform method of setting rates and charges for rural telephone service.

(3) Proposals to standardize the practices within the various companies relating to: (a) Construction and installation charges where plant is put in at the expense of the customer, or, where he shares the cost; (b) mileage charges on rural lines.

(4) Proposals for the reduction or elimination of "short haul" toll, wherever practical, especially in the larger towns and cities.

(5) Use of point-to-point radio-telephone facilities to reach isolated spots in the state.

The first part of the second day of the convention was given over to two separate conferences. The traffic directed by P. M. Schuchart, with discussions led by Mrs. Lucille Terry, traffic supervisor, Florida Telephone Corp.; Mrs. Pearl Morrow, traffic supervisor, of the Inter County Telephone & Telegraph Co., and Mrs. Floy MacDuffie, chief operator, of the Peninsular Telephone Co. The plant and commercial conference was under the direction of J. Fred Hosea and discussions were led by B. N. Darlington, M. L. Atkinson, M. L. Barre and N. M. Shenk.

Both of these conferences were well attended and considered highly successful.

Following these conferences, the general session again convened. Robert A. Gantt, New York City, operating vice president, International Telephone and Telegraph Co, was the sole speaker. His subject was, "The Telephone Industry Abroad as Compared With the Domestic Telephone Industry." For an hour Mr. Gantt held the attention of all present with his very interesting stories of his experiences in foreign countries, and the difficulties in combatting unfavorable conditions abroad. He listed labor difficulties and getting monies out of foreign countries as principal troubles and declared that after 28 years in the foreign field, "We're coming to the conclusion we would rather battle it out here."

Mr. Gantt lauded the International Consultatif Committee, or CCIF, for its contributions toward the standardization of operating practices, equipment and measurements to permit higher grade long distance telephone service between the capitals of most European countries, as well as radio-telephone service between Europe and the United States, South America and other parts of the world. An outstanding accomplishment of the CCIF, he said, was its determination of a method of allocating revenues from international long distance calls.

Last Resort

When editors keep returning your poetry, and the radio give-away programs don't ring your telephone, about the only way left to financial security is to save money from your pay check.

—From the Gladwin, Mich., Record.

OKLAHOMANS DISCUSS HIGH

Costs, Service, Financing

By **O. D. HALL**
Telephony Correspondent

THE Independent telephone industry is on the spot, facing ever mounting costs of operation, increasing demands for service and difficult financing conditions. These problems were brought to the front in several papers and discussions before the annual convention of the Oklahoma Telephone Association, at the Huckins Hotel, Oklahoma City, Nov. 18 and 19. Approximately 150 delegates were registered.

The manufacturers of telephone equipment and the telephone companies are in the same boat so far as meeting increasing demands for service are concerned, L. L. Ruggles, chief sales engineer, Automatic Electric Sales Corporation, Chicago, told the telephone people.

While it is regrettable that the telephone manufacturers and suppliers still experience delays and bottlenecks in their factories, power companies, automobile manufacturers and others are experiencing shortages due to basic causes which are affecting all industries that utilize steel and other critical materials.

While conditions in the plants of telephone manufacturers have improved it is not surprising under present conditions, that production is still lagging, particularly on highly specialized equipment, the speaker said. This equipment requires advanced planning and special engineering for each job. The smoothly working engineering training program through which young men, graduating from engineering schools, were taken into the plants and given special training for telephone engineering work, was disrupted by the war. There is still a shortage of this trained personnel because it takes several years to bring telephone engineers up to highest efficiency, Mr. Ruggles said.

He reported, however, that most conditions which hampered production during the war have eased, but steel and lead are still two of the principal shortages. He also reported that general efficiency of individual workers has lowered and the labor situation is still tight and uncertain with a high rate of turnover.

H. O. Edson, assistant treasurer and assistant secretary, Kellogg Switchboard & Supply Co., Chicago, substituting for Harry C. McCluskey, executive vice president of that company, who was unable to be present because of illness, discussed manufacturers' problems, particularly from the standpoint of financing of smaller telephone companies.

Many Independent telephone companies are faced with additional capital requirements to meet higher demands for service. They must either reduce the volume of their business, which seems impossible under present conditions, or raise more money, he said.

Additional capital requirements of Independent telephone companies right now were estimated by the speaker at between two and three million dollars. The manufacturers are not in as good a position as formerly to assist in financing improvements and additions

Left to right: SAM H. SHUTT, and E. H. DANNER, both of Sherman, Tex.; J. B. HALEY, Austin, Tex.; HOWARD HOUSLEY, Dallas, Tex.; RAY F. RED, Lubbock, Tex.; C. G. MacLELLAND, Brownwood, Tex.

Left to right: C. W. YOUNG and MRS. ORVAL YOUNG, Broken Arrow; A. G. DAVIDSON, Brownwood, Tex.

of telephone companies, the speaker pointed out. They have their own difficult financing problems, with money not so easy to get as formerly. Some operating companies may be thinking of issuing additional stock or taking in a silent partner, but equity capital is hard to get, Mr. Edson continued.

"We must find a solution for this problem; we are doing a lot of work on it, and we may have something to announce in the near future where the manufacturer may be of some assistance," Mr. Edson said. But before a successful plan is worked out the financing firms must have a lot of operating information which can only be supplied by telephone companies. Since some of the smaller companies do not keep adequate records a central voluntary organization might be set up for the purpose of keeping these books for a group of smaller telephone operating companies, the speaker suggested.

Left to right: W. A. DENSMORE, Chicago; LEE B. THOMPSON, Oklahoma City; LYNN J. BULLIS, Oklahoma City.

Leslie L. Conner, Oklahoma City attorney, who has assisted a number of the smaller telephone companies in Oklahoma, during the past two years, in securing increased rates, bore down on the fact that now is the time to apply for higher rates, if needed, and if requirements for them can be demonstrated.

Each telephone company, the speaker emphasized, is entitled to a return of 6 per cent or higher on his investment and about 4 per cent for depreciation and a fair wage or salary for everyone who devotes his time to the telephone company, including management. Mr. Conner suggested that some telephone companies are eating up their original capital and not realizing it because of hesitancy to take inventory and to keep records on operating costs and returns and to ask for rate increases.

H. W. Hubenthal, secretary, Oklahoma Telephone Association, in his annual report, urged Independent tele-

The photos of the Oklahoma convention were taken by TELEPHONY'S correspondent, O. D. HALL. Left to right: B. RICHARDSON, telephone engineer, Oklahoma Corporation Commission, Oklahoma City; FORREST HAND, Beggs; ENDSLEY JONES, Kingfisher; H. W. HUBENTHAL, secretary, Oklahoma Telephone Association.

phone companies to come to their association for assistance when they need telephone rate increases. He stated that 40 or 50 Oklahoma companies, within the past two years, have received rate increases through the help of the association in compiling and presenting the necessary information showing the need of higher rate schedules. He mentioned that several telephone companies still give free toll services between their exchanges. He expressed the hope that all such free service soon will be eliminated. The principle of this arrangement is all wrong, he said.

The fact that about two dozen bills and resolutions proposing to increase minimum wage rates to 65 cents and as high as $1.00 per hour and three bills to remove the exemptions from these rates and hours requirements from all of the smaller companies, died with the last congress, but that they are likely to be revived for consideration in the next congress, was brought out in an address by B. I. Noble, Lincoln, Neb., director of the United States Independent Telephone Association. He pointed out that every member of the Oklahoma Telephone Association is also a member of the USITA and is

Left to right: E. B. JEFFREY, Oklahoma City; J. W. HOLT and JACK HOLT, both of Stilwell.

entitled to its help and cooperation. He urged Oklahoma association members to talk with their congressmen, while they are still at home, and explain to them what proposed burdensome legislation would do to them, backing up their statements with facts and figures.

Speaking on the subject, "Your Business and Mine," A. G. Davidson, assistant to the general manager, Southwestern States Telephone Co., Brownwood, Tex., pointed to the fact that telephone companies are facing new requirements and demands for more modern service, than they rendered during the "'30's." In spite of handicaps and delays in securing some equipment and materials telephone companies must prepare themselves to handle these new demands or wake up later, possibly to realize that the threat of government operation, through the REA or even a Rural Telephone Administration, has become a reality.

Left to right: W. T. AUTRY, Broken Arrow; L. L. RUGGLES, Chicago; C. W. JOHNSON, Kingfisher.

This threat is present regardless of greatly increased costs and demands for more modern and extended service, particularly in the rural areas, the speaker pointed out. The small horse and mule farm of 160 acres and less is rapidly disappearing from this section and one farmer is now able to operate 200 acres and up on a successful scale. These farmers are demanding the most modern telephone equipment and service and telephone companies must adjust themselves to these changed conditions, if they expect to retain and expand their rural business, Mr. Davidson concluded.

"I don't think there is anything more important to the small telephone company than its public relations," declared Leon F. Roberts, Chicago, general representative of the Gary Group Companies. "Some think that public relations involves principally publicity, but the subject is broader than that," he declared. "It includes practice of the Golden Rule in every operation of a company in relation to the public and

Left to right: SAM C. RICH, Oklahoma City; ROY AUTRY, Lubbock, Tex.; W. D. LACY, St. Louis, Mo.; R. H. BURFEIND, Chicago; JACK HARTY, Kansas City, Kan.; W. E. GOSDIN, Oklahoma City.

to its employes. The philosophy of the company and what people in the community think of a company have an important effect on its prosperity."

A talk and demonstration of power line carrier systems, illustrated by equipment set up in the convention room, was made by H. H. Wortman, division plant superintendent, and F. W. Fullerton, district plant engineer, of the Southwestern Bell Telephone Co., Oklahoma City.

The company has several hundred stations of this class of service set up along and adjacent to segments of rural power lines in Oklahoma. The speaker explained that the working practicability of this class of service has been demonstrated, but that a number of economic phases must yet be worked out in Oklahoma.

Russell W. Murphy, a representative of the Oklahoma Corporation Commission, appeared on the program. He invited the telephone people to feel free to bring their problems before the commission.

New officers of the association include: W. T. Autry, Oklahoma Telephone Co., Broken Arrow, president; V. S. Reynolds, Southwestern Associated Telephone Co., Waynoka, first vice president; I. J. White, Shidler Telephone Co., Pawhuska, second vice president; H. W. Hubenthal, Oklahoma City, secretary, and Sam C. Rich, Southwestern Bell Telephone Co., Oklahoma City, treasurer.

Members of the board of directors are: Mr. Autry; Mr. Davidson; Mr. White; Forrest Hand, Beggs; Mr. Reynolds; Clarence E. Johnson, Kingfisher, succeeding Endsley Jones, retired; John W. Holt, Stilwell; A. L. McFadden, Ringwood, succeeding J. B. Bohlen, Nicoma Park, retired, and W. E. Gosdin, Oklahoma City, succeeding M. L. Pearcy, now of St. Louis.

An inspirational and humorous address was delivered at the annual dinner and entertainment Thursday night, by Jeff H. Williams, Chickasha, Okla. His talk dealt largely with fundamental Americanism. Lynn J. Bullis, division commercial superintendent, Southwestern Bell Telephone Co., Oklahoma City, was the toastmaster. Vocal selections rounded out the entertainment.

Registering the delegates were: Theola Kreager, assistant secretary of the association; Irene Turner and Anastasia Standifer, both of the Southwestern Bell Telephone Co., at Oklahoma City.

V V

Interstate Plans $1,500,000 Construction Program

A tentative 1949 construction budget of $1,250,000 to $1,500,000 for Interstate Telephone Co., Spokane, Wash., was reported recently by I. F. Krehbiel, vice president and general manager.

"We will have spent approximately $1,000,000 during 1948 by the end of December," Mr. Krehbiel said, "and next year we are increasing the budget for new pole, wire and cable, the purchase of building lots in several communities and the erection of new buildings.

"We plan conversion to dial operation in 10 small exchanges. More than 40 new carrier circuits will be added to our toll facilities to speed up this important branch of our service.

"There now are nearly 40,000 stations served by our company in 50 exchanges and we have on file approximately 2,000 applications for service, most of which we hope to fill during the coming year."

Left to right: J. L. BUTLER, Kiowa; COL. W. V. PARKER, San Antonio; S. LLOYD, Nicoma Park; I. J. WHITE, Pawhuska; W. C. HOPPER, Galion, Ohio.

Registering the delegates at the Oklahoma convention are, left to right: THEOLA KEAGER, IRENE TURNER, ANASTASIA STANDIFER, and "BILL" ANDREWS, all of Oklahoma City.

Courts and Commissions

Alabama Commission Writes Applicants for Service

Recognizing the difficulties of telephone operating companies in meeting the demand for telephone service, the Alabama Public Service Commission recently sent a letter to applicants for telephone service still on "held order" lists in various cities of Alabama, explaining the shortages of certain materials which make it impossible for telephone companies to get sorely needed equipment to expand their facilities.

Representatives of operating companies attending the Alabama Independent Telephone Association Convention Nov. 18 and 19, in Montgomery, expressed appreciation of this unsolicited action.

The commission's letter, signed by Gordon Persons, chairman; Jimmy Hitchcock and C. C. (Jack) Owen, associate commissioners, and sent to Birmingham applicants, was as follows:

"The public service commission is an agency of the State of Alabama, set up by the legislature to see that customers of every utility receive fair treatment. In carrying out this policy we have become concerned over the large number of unfilled orders for telephone service.

"Our investigation of the Birmingham situation has just been completed, and we find you have applied for service from Southern Bell. The purpose of this letter is to let you know that we are aware of your need for a telephone.

"As you know, anything made of metal is hard to obtain. On top of this, there is the heaviest demand for telephone service ever known. A telephone switchboard will handle just a certain number of subscribers, so when all 'numbers' are sold out, new applications cannot be filled until someone gives up his telephone or *new equipment is added.*

"Telephones are like new cars, refrigerators and houses—there are just not enough to meet the demand. Southern Bell still has 56,000 unfilled applications in Alabama, although they have connected 40,000 new telephones this year. Therefore, this unhappy situation is not confined to Birmingham and vicinity, but is *everywhere.*

"Lately, although some materials have become more plentiful, much new equipment is still needed to supply the demand for telephones in the Birmingham area. Just as soon as this equipment is received and installed, your order will be given prompt attention by the telephone company.

"We assure you there will be no *unnecessary* delay in giving you a telephone, as we are very carefully watching the whole situation.

V V

Racing Wire Agency Appeals WU, PT&T Service Suspension

The Ninth U. S. Circuit Court of Appeals in San Francisco, Calif., has taken under submission an appeal by Continental Press Service, a nationwide racing wire, against a lower court ruling upholding the right of Western Union to suspend service to the horse race wire's customers.

Charles H. Carr of Los Angeles, attorney for the racing wire, told a three-man court that Continental was "merely a disseminator of news" and that it was not responsible for what use its clients make of the racing information.

The California Public Utilities Commission originally charged that Continental furnished race results to bookmakers in California. Western Union and Pacific Telephone & Telegraph Co. agreed to suspend service to Continental because of this.

The suspension was upheld by a Federal District Court, but Continental succeeded in getting service restored by obtaining a temporary restraining order during the time the circuit court is considering its appeal.

Western Union Attorney Oscar Lawler argued that Continental had failed to deny its wire service was being used illegally.

Western Union, he contended, "is in danger of being implicated in a knowing violation of the law if it continues to furnish service when it knows it is being used illegally."

V V

Pennsylvania Independent Asks Higher Intercommunity Rates

The Luzerne Telephone Co., Forty Fort, has filed with the Pennsylvania Public Utility Commission new rates for intercommunity telephone service in Luzerne and Columbia Counties, effective Jan. 21.

The rate schedule for service between these points, where there is now no service charge, is:

Drums, Nuremberg, 10 cents; Drums, Ringtown, 15 cents; Conyngham, Nuremberg, 10 cents; Conyngham, Ringtown, 15 cents; Nuremberg, Ringtown, 10 cents; Wapwallopen, Nuangola, 10 cents.

The company said the new charges will bring an estimated $1,441 a year.

V V

Subscriber Asks Extension Of Rural Service

A delegation from Franklin County, N. C., appeared before the North Carolina Utilities Commission Nov. 24 to request that the commission investigate the terms of an alleged verbal contract between the Franklin County group and the Carolina Telephone & Telegraph Co. relative to providing telephone service in rural areas of the county.

They contended that the verbal contract was made by the group and J. F. Havens, assistant to the president of the company, two years ago and provided for the installation of telephone service when persons in rural areas met requirements fixed by the company. Although the terms of the contract have been met, according to the petitioners' claims, they contend that only one rural telephone project has been started in the county.

If the commission after investigation finds the contract to be valid, it is asked by the delegation to "employ means at its disposal to require that telephone service be provided Franklin County."

V V

Franchise Dispute Settled; Odin, Ill., Service Restored

Telephone service in Odin, Ill., which had been discontinued on Nov. 14 because of a controversy over a franchise between the Odin Telephone Exchange Co. and the Odin Village Board, was

restored on Nov. 15. The restoration followed a special meeting between Leo I. Breithaupt, manager of the company, and the village board.

The service stoppage affected 175 subscribers within Odin's village limits as well as that many more on rural lines.

Mr. Breithaupt said the service had been cut off after the Odin Village Board had failed to renew the company's franchise to operate there, and had passed an ordinance making it unlawful to operate without a franchise, providing fines up to $200 per day for violation.

Both the Illinois Commerce Commission and the Odin Village Board had been officially notified of the telephone company's action, Mr. Breithaupt reported.

The company first applied for a renewal of its franchise last January and, failing to get the renewal, had operated without a permit since the old agreement expired Oct. 8, according to Mr. Breithaupt.

The ordinance making the company's operation unlawful was passed Nov. 1, and went into effect Nov. 14, he revealed.

It is understood that the ordinance providing fines for operating without a franchise was repealed by the village board, hence the restoration of service by the telephone company.

A delegation of four Odin residents headed by Village President B. H. Wooters conferred with the Illinois Commerce Commission on the company's service.

George C. Mayhew, commission supervisor of public service, said the group objected to the collection office being moved from Odin to Sandoval (an exchange of the company) and also registered complaints against general service.

Mr. Wooters is reported to have stated that the board is not willing to grant the telephone company another long-term franchise, but would issue a license to operate if the company will pay either 3 per cent gross receipts or an annual license fee of $200, payable quarterly in advance.

He cited a "long period of poor service" as the reason for the board's action, and said the telephone company will not be granted a renewal of its franchise until the board has some assurance that better service will be maintained.

H. W. Jackson, Odin clerk, said that the ordinance placing a license fee on the company was taken from a model provided by the Illinois Municipal league.

He claimed the telephone company violated state utility regulations when it discontinued service.

V V

Dates for Bell Rate Case Hearing in Florida Set

The petition of the Southern Bell Telephone & Telegraph Co. to the Florida Railroad & Public Utilities Commission to make a general rate increase immediately effective under bond has been denied by the commission. The matter has been set for public hearings, one on Dec. 1 in Miami, the other on Dec. 6 in Jacksonville. The commission reserved the right to set other hearings at different places. (TELEPHONY, Nov. 6, p. 26.)

On its own motion the commission has also called an investigation concerning the desirability of requiring Southern Bell to inaugurate non-optional extended scope service between certain contiguous exchanges. This service would remove short-haul toll charges between contiguous exchanges and permit toll-free messages both ways between the two contiguous exchanges. The service would be non-optional, that is, it would be available to all subscribers in the two exchanges and they would be charged for it.

V V

Michigan Associated Completes Testimony for Rate Increase

Testimony has been completed before the Michigan Public Service Commission on the application of the Michigan Associated Telephone Co., Muskegon, for rate increases which would yield an estimated $626,000 in annual revenue.

The company was granted a temporary rate increase Aug. 2, producing approximately $342,000 a year more revenue. That applied in 49 of the company's 72 exchanges because the commission held that "in 20 exchanges no progress had been made in improving service." (TELEPHONY, Aug. 28, page 27.)

Cyrus G. Hill, Chicago, hired by the commission to make a study of Michigan Associated, testified higher rates are necessary.

"My estimate for 1949 indicates a net operating loss of $141,000 would have been incurred if the rates prior to August had continued in effect," his report stated. "The rate increase approved Aug. 2 should give the company a net operating income of $150,700 or about 1.22 per cent return on its net plant investment."

"A comparison of operating expenses per station shows associated with $3.16 for 1948 and an estimated $3.20 for 1949."

Mr. Hill also reported finding "widespread evidence of inadequate current maintenance" by Michigan Associated. He testified the company is "well along on work to meet requirements of the commission after an inspection made by the state's staff in the spring of 1948."

He also said the company "spent more money on maintenance than it is contemplating" and admitted in cross-examination by an attorney for Michigan Associated that "if the company does spend more for maintenance, it should have additional revenue."

Samuel K. Stover testified on a field check of the telephone company's inventory which he supervised.

"Our check covers approximately 5 percent of the property, and in general agrees closely with the company's basic inventory, which is substantially an accurate record," he reported.

New exhibits represented by the company showed that wage increases granted Oct. 3, 1948, added $131,700 a year to operating expenses, plus $8,650 more annually for pension costs, state unemployment and federal old age taxes.

For the 12 months ended Sept. 30, net operating revenues were shown as $3,982,801, with expenses of $3,370,085, leaving $612,716 as net operating income. It is estimated that for 1949 revenues will be $4,430,000, expenses $3,733,900 and net operating income $696,100.

A report on the company's $2,516,827 expansion program showed that $891,752 worth had been completed on Nov. 1.

V V

South Dakota Company Increases Rate

The South Dakota Public Utilities Commission on Nov. 24 approved an increase in net rates for the A. B. & E. Telephone Co., Beresford, from $1.75 to $2.25. The company was also authorized to bill subscribers 25 cents per month in excess of the above net rate from which a discount of 25 cents shall be allowed if payment is made on or before the 15th of the month.

The company serves 385 rural subscribers and, according to the commission, it does not operate for profit and makes no charge for depreciation, hence all maintenance expenses, as well as any new construction, must be paid for from current revenue. The commission noted that, during the years when costs are high and expenses exceed the revenue available, the company requests an increase in rates and when costs are down and revenues

exceed expenses, rates are reduced in the form of a larger discount on monthly bills.

V V

Asks Approval of Bell Rates in Acquisition

D. R. Majors, who on Dec. 1 will take over the telephone exchange at Carmen, Okla., under a recent acquisition from the Southwestern Bell Telephone Co., has filed an application with the Oklahoma Corporation Commission to approve the Bell rates there, which were put in force recently under a court injunction applying to all Bell exchanges in Oklahoma.

Mr. Majors agrees to put up bond to protect the subscribers at Carmen, in the event that final rates under the commission hearings prove to be lower than the temporary rates authorized in the court injunction.

The old rates and the proposed new rates at Carmen are:

	Old Rates	*New Rates*
Business	$2.75	$3.25
One-party residence	1.75	2.00
Four-party residence	—	—
Rural, business	2.75	3.00
Rural, residence	1.75	2.00
Switchers, business	.53⅓	1.50
Switchers, residence	.33⅓	.75

No hearing date had been set, but the petitioner asked that a hearing date, or an order, be entered in time to permit the new owners to continue the Bell rates in force on Dec. 1.

The corporation commission on June 17 issued an order authorizing Mr. and Mrs. Majors to trade their telephone exchange at Spencer, Okla., to the Southwestern Bell Telephone Co., and to receive the Carmen plant from the Bell in exchange upon payment by the former Spencer owners of $5,000 to the Bell company.

V V

Bell Asks Further Rate Increase in North Carolina

The Southern Bell Telephone & Telegraph Co. on Nov. 22 asked the North Carolina Utilities Commission for rate increases which would increase its annual gross income by $2,667,000, requesting no specific rate schedule but leaving it up to the commission to set a schedule which would produce the requested increase in revenue.

Stating that its earnings must be increased "to provide the fair return necessary to enable it to maintain its credit and attract capital required to continue the furnishings of adequate and efficient telephone service," the company said that to do this it must receive earnings "at the rate of at least 6¾ per cent on the company's North Carolina intrastate net investment."

The increases, the company said, are necessary due to increased costs of providing service and to high costs of an expansion program. The present rate schedule was termed "unjust, unreasonable and insufficient."

The company stated that under present rates its earnings on its "intrastate net average investment of $36,325,510 for the eight-month period from February to September, 1948, were at the annual ratio of 3.85 per cent," the earning rate declining from 4.6 per cent in 1945.

Last Feb. 1, the North Carolina commission authorized the company to increase its residential service rates and certain miscellaneous charges sufficiently to raise its annual gross by $680,000, and on Dec. 31, 1946 the commission granted the company permission to increase its business service rates to gross $252,000 in additional revenue and to increase its intrastate long distance rates to gross an additional $228,000 a year.

V V

Southwestern Bell Receives Interim Increase in Kansas

The Southwestern Bell Telephone Co. has filed conditional acceptance of an interim $1,200,000 annual increase in its rates granted by the Kansas Corporation Commission, Jeff Robertson, commission chairman, reported on Nov. 22.

Mr. Robertson announced the company had suggested modifications in the proposed bond which would cover refunds to customers in event a final determination shows the company not entitled to an increase.

He said the suggested modifications are being considered by the commission.

Southwestern Bell has pending before the commission an application for a temporary $3,333,333 annual increase in intrastate rates. Pending in district court is a telephone company appeal from a commission decision denying the company a similar permanent increase. (TELEPHONY, Nov. 20, p. 32.)

V V

Canadian Bell Telephone Co. Awarded Damages

Bell Telephone Co. of Canada was awarded $891 damages in an action against the George W. Porter Construction Co. in non-jury Assize Court. The suit arose from damages done in 1946 to telephone cables underneath a roadway in Toronto, where the construction company was laying tile and asphaltic pavement.

Evidence for the plaintiff revealed that a puncture in a lead sheath around the cables caused a serious failure of circuits connecting northern Ontario summer resorts and Eastern Canada for a period of 24 hours.

V V

PT&T Asks Increased Rates in Washington

Rate increases in the state of Washington, which would add 25 to 50 cents a month for residence service, and in a few cases 75 cents, were asked Nov. 22 in a petition to the Washington Department of Public Utilities by the Pacific Telephone & Telegraph Co.

Business rates would be increased in varying amounts from $1.25 to $2.00 per month.

The overall statewide increase would total about 8 per cent of revenues, the company explained.

E. D. Wise, vice president and general manager for Washington, said that continued low earnings, insufficient to attract necessary capital to carry on a record service improvement and expansion program, made the company's action necessary.

V V

Hears Case on Sale of Pennsylvania Company

The Lycoming Telephone Co., Trout Run, Pa., said it would improve service for residents of five townships in Lehigh County and one in Berks if permitted to purchase the plants and assets of the Kutztown Rural Telephone Co., in a hearing Nov. 18 before the Pennsylvania Public Utility Commission.

A spokesman for the Lycoming company pointed out that commission approval of the purchase would enable it to improve service generally by eliminating toll charges. It also would permit amalgamation of Lycoming's resources with those of the Berks and Lehigh Telephone Co., the spokesman said. A dial system eventually would be installed, he added.

V V

Requests Rate Increase

The Bremen (Ohio) Telephone Co., serving customers in Fairfield, Hocking and Perry Counties, has requested the Ohio Public Utilities Commission for permission to increase private business rates from $27 to $48 a year and individual residences, from $18 to $36 a year.

V V

Appointed to Commission

Joseph W. Hawley has been appointed to a six-year term on the Colorado Public Utilities Commission, filling

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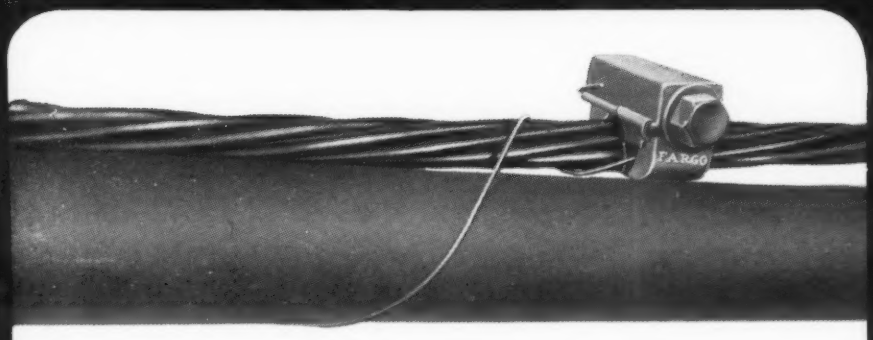
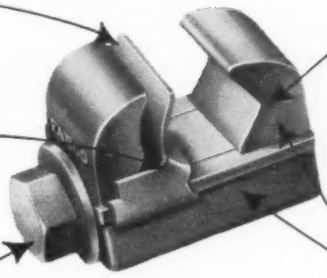
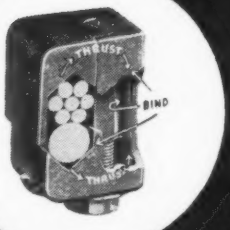
LASHING WIRE CLAMP



ONE SIZE CLAMP TAKES ANY SIZE LASHING WIRE AND ANY MESSENGER UP TO 16M STRANDING (½"). IT HAS VIBRATION PROOF FEATURES — "ONE-PIECE" CONSTRUCTION—IS EASY TO INSTALL—READILY SALVAGEABLE AND HOLDS THE LASHING WIRE TO ITS FULL BREAKING STRENGTH.


STAINLESS STEEL PRESSURE BAR
"V" GROOVE CENTERS STRAND IN CLAMP
SHOULDER CONTROLS LASHING WIRE POSITION
"VISE-TYPE" "ONE-PIECE" CONSTRUCTION
ELECTRO-ZINC PLATED STEEL BOLT
HOT DIP GALVANIZED MALLEABLE IRON

VIBRATION PROOF



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The 5000 standard series, with all bronze construction, makes a permanently trouble free electrical connection. They are available in sizes from No. 8 to 1,000 MCM and are excellent time saving connectors for bridging ground wires.

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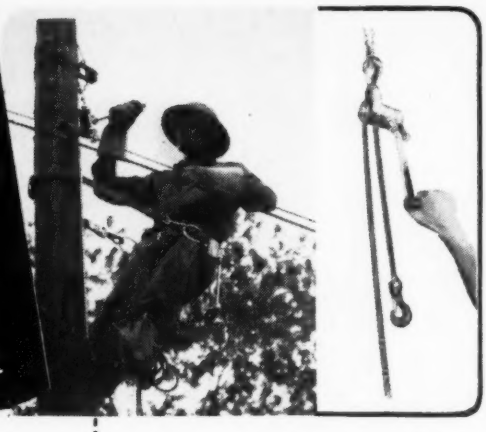

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Compact — Quickly snaps on tool belt!

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Handle can be used as lever or high-speed crank!

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Ask your distributor or write for bulletin NMP-1—shows an amazing variety of time-saving uses for the "Mighty-Midget."

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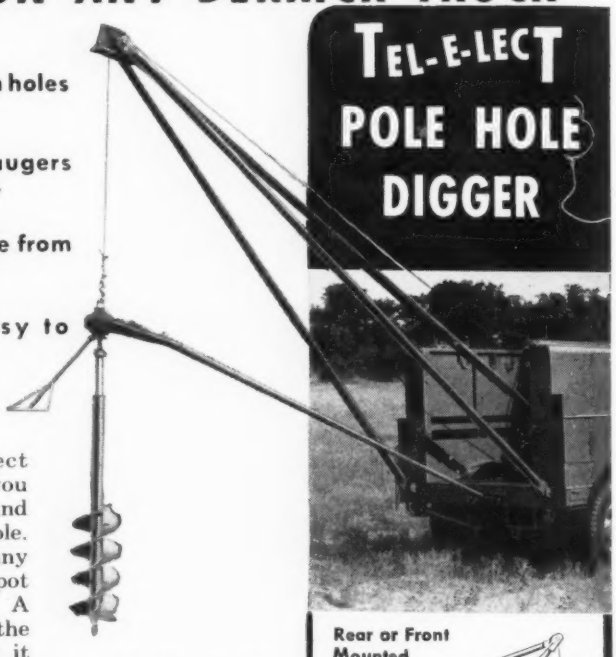
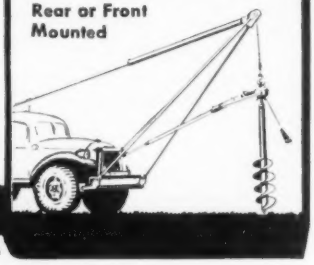


WITH the Tel-E-Lect Pole Hole Digger, you use the same truck and crew that sets the pole. You can drill a hole any place that you can spot the pole derrick. A single bolt attaches the digger to the truck; it works suspended from the derrick. Powered by the truck motor through a power take-off shaft, Tel-E-Lect is raised and lowered by the winch line. Fits the budget of even the smallest utility, and quickly pays for itself. *Ask for circular.*



TEL-E-LECT PRODUCTS, Inc.

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the vacancy left by the recent death of Malcolm Erickson. Formerly, Mr. Hawley had been an assistant state attorney general serving the commission as an attorney.

V V

Pennsylvania Commission Suspends Bell Rates

The Pennsylvania Public Utility Commission plans to begin hearings within the next few weeks into the proposed 16 per cent increase in the rates of Bell Telephone Co. of Pennsylvania. (TELEPHONY, Nov. 27, p. 37.)

By unanimous vote of the four commissioners the rate increase was suspended for six months beginning Jan. 21 when the rates would have gone into effect had the commission not acted.

V V

Resigns from Neb. Commission To End Election Controversy

Einar Viren, who has been filling a vacancy on the Nebraska State Railway Commission caused by the resignation of Duane Swanson, has resigned to put an end to a controversy over whether he held the post until Jan. 6, when newly-elected state officers take over. Mr. Viren had been contesting the claim of Harold A. Palmer, elected in November to succeed him, that he took office as soon as the canvassing board certified his election and he gave bond. Mr. Palmer's position was sustained by Attorney General Johnson.

Mr. Viren said that his claim was based on legal authority, but that rather than disrupt the harmony and continuity of the work of the commission he would step down. He asked the governor to make certain of the legality of Mr. Palmer's actions as a member by appointing Mr. Palmer to succeed him at once. He recommended that the legislature act to avoid similar situations in the future.

V V

Two Lincoln T&T Operators Retire After Years of Service

Miss Ann Seymour, traveling chief operator of the Lincoln (Neb.) Telephone & Telegraph Co., has retired after 43 years of service in the industry. She was the last remaining employe of the group of Bell operators who joined the company when the Lincoln Company exchanges were consolidated in 1913. She had served continuously in various supervisory capacities in the Lincoln and general traffic departments, and for a number of years was a traveling instructor.

Retiring also was Mrs. Stella F. Stanley, supervisor and former chief operator of the Beatrice exchange.

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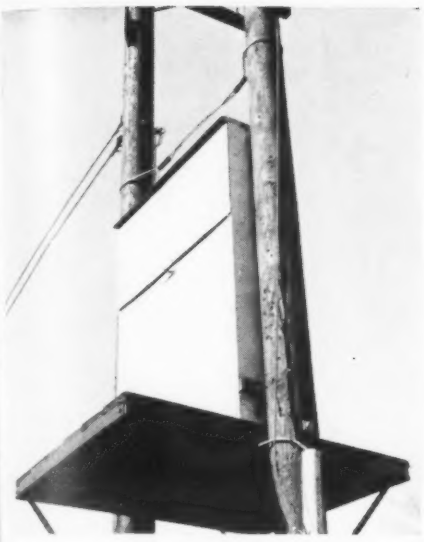
Housing Unattended Exchanges

(Continued from page 21)

temperatures of 35° F., and even lower, provided the air is comparatively dry and sudden extreme changes in temperature are prevented. However, heating is extremely useful in reducing or eliminating moisture in an unattended exchange. Proper building insulation can be used most effectively to exclude moisture and reduce the cost of heating. It would appear that an ideal condition would be to maintain a temperature of 68° F. in an unattended dial exchange, as this would permit comfort for workmen. However, this would prove rather expensive. Many operating companies have learned that temperatures ranging from 45° to 55° F. are satisfactory, according to their geographic locations.

When an unattended dial exchange is unheated and warmed only during visits of workmen, the temperature inside a building may be raised 40° to 50° within a period of 15 to 20 minutes. When the workmen leave, and the heat is turned off, the rate of room cooling depends upon the efficiency of the insulation. During this cycle, in perhaps an hour's time, the equipment and building inner surfaces will not follow the same cycle of heating and cooling as the surrounding air. When the heat is turned off, these solid materials will be a few degrees colder than the air. This results in condensation of moisture on all surfaces if the air had a relatively high moisture content at the start of the cycle. If the building can be maintained at a temperature at which maintenance work can be performed without discomfort, these unfavorable conditions are not likely to occur.

There are two pronounced effects of high humidity on telephone equipment, i.e., moisture absorption, such as low insulation of cables and other insulation material, and troubles caused by condensation as corrosion of metals. As previously mentioned, condensation occurs in an atmosphere having a high percentage of relative humidity if the equipment is of a lower temperature than the surrounding air. This condition may be averted by heating or by the use of dehumidifying equipment which extracts the moisture from the air. It is extremely desirable to provide control equipment that will definitely determine when the percentage



Pole mounted 10-30 line dial switchboard with battery and charging equipment.

of relative humidity has reached a dangerous point, usually considered to be between 65 and 80 per cent. Generally, some form of hygrometer arrangement can be used to close contacts and operate dehumidification equipment, thereby reducing the moisture content of the air to a safe point. Air conditioning equipment or chemical dehumidifiers may be used to advantage in the unattended dial exchange.

It is not necessary to elaborate upon lighting to meet all normal requirements in the unattended exchange building. Ordinarily, three 100-watt outlets on the ceiling, controlled from a switch located at the left of the entrance door, will prove adequate. Fluorescent fixtures in these outlets may be used to advantage if incandescent bulbs are not considered suitable. Double convenience outlets equipped with pilot lights should be mounted on sidewalls, as required, in order to accommodate extension lights, soldering irons, etc. The ceiling lights should be on a circuit separate from the convenience outlets. A separate circuit should be provided to supply commercial current to the power equipment for battery charging. The electric meter should be installed on the outside of the building.

The pole mounting idea for unattended dial switching equipment, in the opinion of numerous telephone engineers, is fundamentally sound. This idea, while not new, appears to have increased future possibilities for the provision of telephone service. This novel arrangement permits cheap housing which makes possible the installation of small units of switching equipment located to reduce the cost of distribution plant. Some equipment manufacturers have been discouraged in marketing a pole mounted housing of their own design. The reason for this is that

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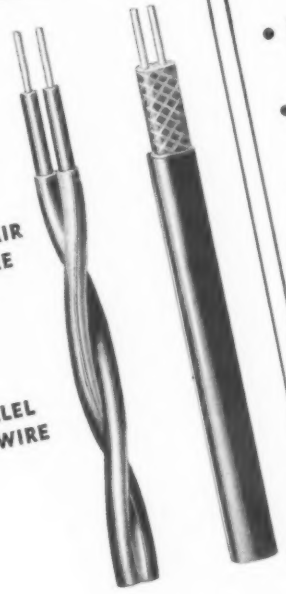

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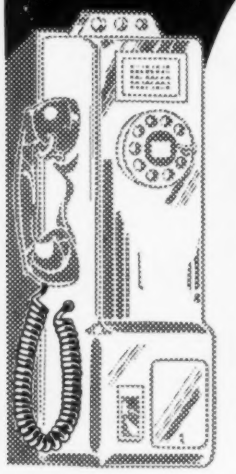

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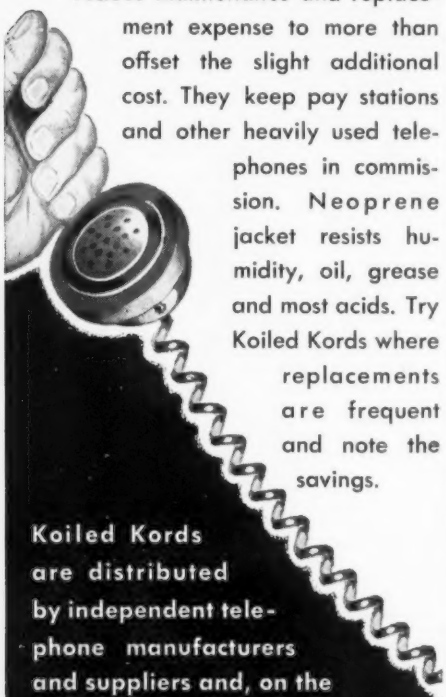

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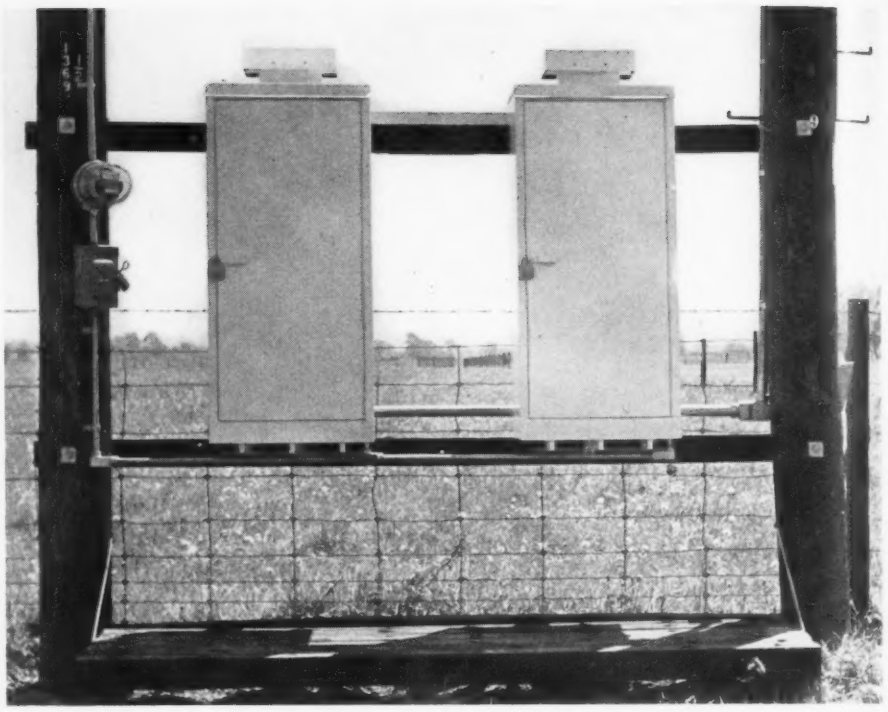

Method used by the Indiana Bell Telephone Co. to install carrier equipment at the toll cable terminal. A similar arrangement might be used successfully to house small dial switching units.

if the manufacturers furnished the housing the purchaser would expect it to be bullet-proof. And if it is made bullet-proof, the thickness of the metal required makes the cost prohibitive. It is a singular fact, however, that the pole mounting housing constructed by telephone companies is, in general, not bullet-proof and we have not been able to learn of one instance where equipment so installed has been damaged by gunfire.

Some manufacturers of dial equipment have encountered another selling obstacle to the pole mounted 10-line switchboard. In the past, for the most part, this type of installation was considered for locations where it appeared that not over an ultimate of 10 lines would be required. The 10-line board has always been hard to sell for the reason that when it was considered seriously by a telephone company, it usually decided that the difference in cost between a 10 and 30-line switchboard was so little as to make it advisable to buy the larger board.

Most operating companies, after they decided to buy the 30-line board, preferred, for reasons of organizational pride and public relations, to house it in a building which would add to the community and the prestige of the telephone company. Many telephone engineers now share the opinion that they can foresee a possibility for using both the pole mounted exchange idea and the 10-line unattended switching unit in the present era of development of the telephone industry. The reasons cited for this are, first, in the past two or three years, there has been a great deal of consideration given to "Concentration Units" located out from wire centers in congested rural areas to reduce line mileage. Considering small dial systems as concentration units, rather than central offices, will eliminate many former factors of consideration such as civic pride, enhancement of plant for resale purposes, growth possibilities, etc., all of which have militated against decisions in favor of very small units of equipment.

We are informed by M. J. Luichinger, outside plant coordination engineer, Indiana Bell Telephone Co., Indianapolis, Ind., that this company is now installing M1-A carrier systems out on the line as an interim arrangement. Because of the excessive losses incurred in the toll entrance cables, it often is necessary to place the M1-A equipment at the toll cable terminal and operate at voice frequencies through the cable. This equipment is not located at the pole top, but a few feet above ground level so that it may be conveniently reached by maintenance personnel. The metal housing is rather heavy, but may be considered strictly bullet-proof. It would probably stop a 22-caliber bullet, but not a high powered rifle bullet. The housing has a ventilator top and an air entrance at the bottom. Automatic electric heaters are provided to maintain an average temperature and to control humidity. It would seem that a similar arrangement could be used to advantage for

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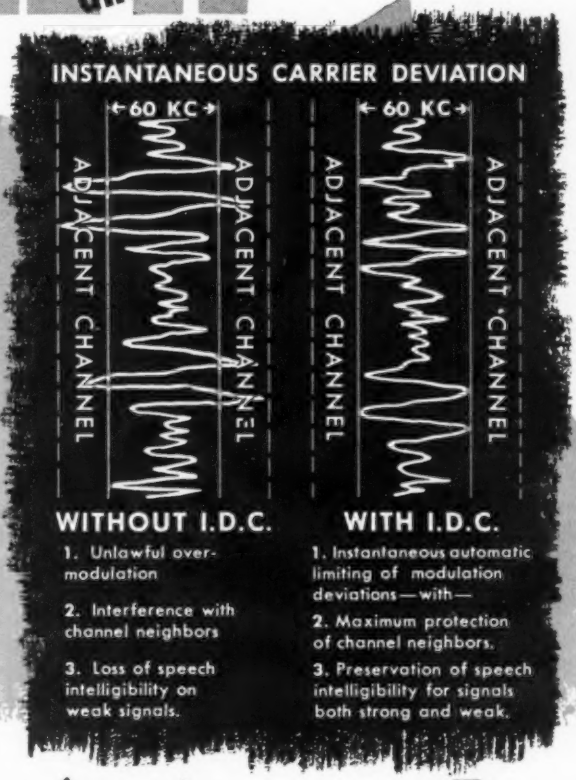

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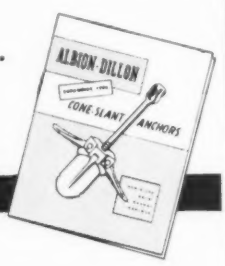

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the housing of small unattended dial units.

The housing of expensive dial switching equipment in a manner so as to provide a long service life with minimum maintenance costs is a most important undertaking on the part of any operating company. That this important requirement has been successfully accomplished in the housing of the unattended dial exchange, we believe, is indicated by the numerous photographs and drawings received from various sections of the country and published with this article. We believe that the experiences of these companies will prove extremely helpful and will furnish ideas in the solving of many problems in the proper housing of unattended dial exchanges by small operating companies or others contemplating such installations.

Preventive Maintenance

(Continued from page 26)

manent stretch under storm loading, which may cause troublesome slack to accumulate. Close watch should be maintained for burns on the line wire at old ties. These burns so weaken the wire that a break is probable under storm loading. All old splices should also be checked for high resistance and defective ones cut out. The use of compression type splicing sleeves is a positive remedy for this type of trouble.

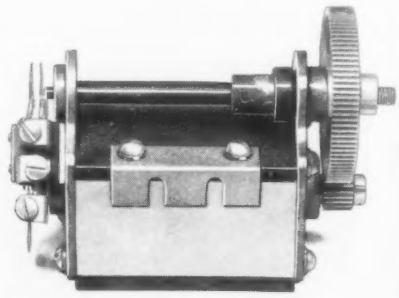
When rusty or defective line wire is encountered, its replacement is always a necessity. If the ultimate line is to be of another type, then complete sections of the new type wire may be installed. For example, if the old iron wire is to be replaced with copper or copperweld, a complete section of the new wire may be installed and the old wire, for the present, may be left in service on the remainder of the line. When wire of a different type is used, normally both sides of the circuit should be replaced in equal amounts in order to avoid unbalances. It also must be remembered that, when dissimilar wires such as copper and steel are connected, a special connector is necessary.

Broken, chipped or cracked insulators should be replaced. There never is any economy in using defective insulators. When the wire has been pulled to the proper tension, it should be tied in on all insulators in an approved manner.

Corners and anchors may be considered the foundation of all pole lines. Particular care should be taken to make certain that all corners are ade-

Connecticut

BIG 5 ALNICO HAND GENERATOR



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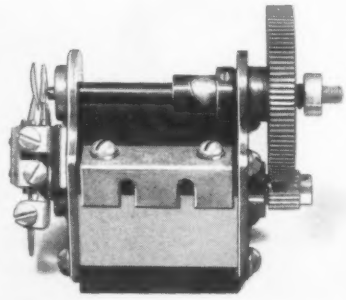

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quate on the line overhaul. In general, all corners in the line should be adequately and securely guyed. On certain corners, because of road clearance, overhead guys must be extended across a highway to a stub and a down guy. This type of construction, in most cases, proves to be rather expensive and often may be avoided by the use of a push brace. In some cases, also, side guying may be omitted on corners where the pull is small and the soil is firm. In cases of this nature, however, it is necessary to use poles one class larger than are used in the remainder of the line and they should be set at least one foot deeper.

Storm guying is good insurance against total line failure in heavily loaded areas. Frequently, an H-fixture may prove more economical and may be used to advantage for this purpose. This type of fixture may, in some cases, prove to be less costly than four down guys and anchors. The M-fixture also may be used frequently on certain types of corners to reduce guying requirements.

Various types of patent anchors are now available for use under all soil conditions. The expansion type of varying sizes are commonly used in the guying of open wire lines. If there is a suspicion that any old anchors are weak they should be replaced. Once installed, anchors are not seen from day to day as is the case of the other parts of a line, and, often after installation, anchors are practically forgotten as far as inspection is concerned. For this reason, they should be carefully selected and properly installed. If an old log anchor has been in service for a considerable number of years, its holding power may be questioned. It will prove far cheaper to install several new anchors during the line overhaul than to replace an old one that has let go during a storm and caused a complete line failure.

Messenger strand, or a suitable size of solid high tensile strength steel wire, may be used as guy wire. The pole attachment may be made by the wrap method of an eye bolt. Strand is usually connected to the anchor rod by the use of guy clamps. The wrap or served method is generally used for the solid wire guy.

Tree clearance is most important on any open wire lines and this feature should be carefully considered on the overhaul. When adequate tree trimming cannot be obtained, higher poles, in general, must be used. When trees are of such height as to make this type of clearance impracticable, it is sometimes possible to run the line wires under them on low poles. In extreme cases, it may be necessary to reroute open wire lines to clear valuable trees.

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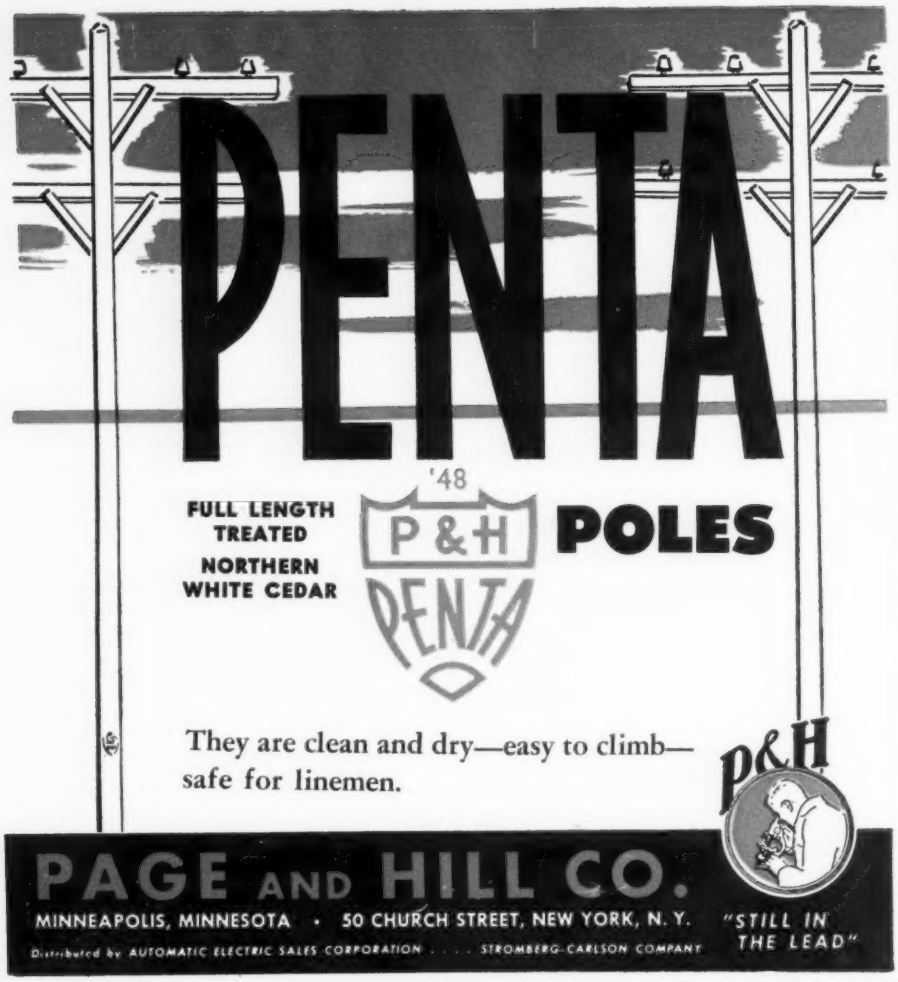
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The calling rate on all present-day telephone systems is constantly increasing. If this increase continues for the next several years, and there is every indication that it will, the stations on the average rural line must be reduced in number. This will mean that a greater number of lines must be connected to the average central office. Because of this probable increase in service, careful future planning is most essential. This is comparatively easy when a complete new line is to be constructed, but becomes more involved when a line is overhauled, with later expansion in prospect.

It is not claimed that this article contains all of the answers to the problems that must be solved. It is hoped, however, that the factors mentioned will indicate the line of thought that should be followed.

In the Nation's Capital

(Continued from page 28)

commentator, points out that with the value of money dropping the way it is, an increase in social security is really only a false appearance of an increase—not a real increase. Sullivan argues that 50 cents withheld from a pay check 10 years ago would have bought a decent meal at a modest hostelry, but that when the worker is 65 years old and gets his 50 cents back in the form of a pension payment, he might be lucky if it would buy a fair-sized bag of peanuts.

In other words, retired workers in general, as well as the public utility investor in particular, stand to take a beating if their respective earnings in the future are to be keyed strictly to original cost dollars invested. It is the same principle which shrinks the rate base that could make the pension check seem like a mockery, if prices continue to rise.

The impish *New Yorker* managed to inject more than a modicum of sound and penetrating reasoning along with its typical antic touch when it recently toyed, editorially, with Mark Sullivan's thesis that the way to increase social security is to see that the dollar does not shrink any more. Said the *New Yorker:*

". . . The argument is sound enough. Perhaps the way to manage social security is to forget about dollars and withhold meat instead. Every employer could be required to maintain a deep-freeze unit and withhold one square meal each week for each employe. Then when an employe reaches 65 and starts digging around like a squirrel on a winter morning, he will dig up some

frozen meat instead of a shrivelled dollar. Of course, withholding meat for security reasons would cause food prices to skyrocket, and this, too, might be a social advantage, since many of us could normally be counted on to die of malnutrition before we ever reached 65."

What has been suggested above about the public utility investor during an inflationary era doubtless is just as true with respect to the investor in government bonds. Within only a few years the maturity date on the early issues of popular-priced government war bonds will arrive. Those who invested 1941 dollars at a time when a thousand of them would buy a good, new automobile and when 10,000 of them would have bought a very nice six-room house, are going to do some serious reflection if prices continue to rise and they are given in return for their bond the agreed four-to-three return over the 10-year period.

Bear in mind, this is not to suggest that there is any question about soundness of war bonds, *per se*. On the contrary, as government bonds go, so goes every other bond. The only point made here is that the strict application of the original cost doctrine in determining a return on investment over a period of severe inflation is likely to hit everybody in some degree—not just the public utilities.

But the re-dealers, or self-styled "truly Truman" congressmen, still talk about "generous dividends" paid on common stock as a reflection of high earnings. "Stingy" would be a more honest adjective. Technically, it is true that dividends have been climbing on common equities of all corporate securities, as compared with 1929-30, but in terms of inflated dollars. When one stops to realize that a dollar bill in the twenties would buy from two to three times as much as a dollar bill today in many commodities, the apparent "increase" quickly tumbles into actual red-ink valuation.

According to data compiled by Moody's Investors Service, dividend payments of 125 major industrial corporations averaged $2.97 a share in October. That exceeds the 1929 rate of $2.47 a share. But dividends are only half the story. Earnings are the other half, and they are up far more sharply than dividends. In the third quarter of this year, for example, earnings of these 125 companies ran at an annual rate of $7.15 a share. Thus directors were paying out to stockholders 42 cents on every dollar earned. They kept for general corporate purposes 58 cents. In 1929, the reverse was true. Corporations paid out 61 cents on the dollar, retained 39 cents. It is this reservation of earnings for

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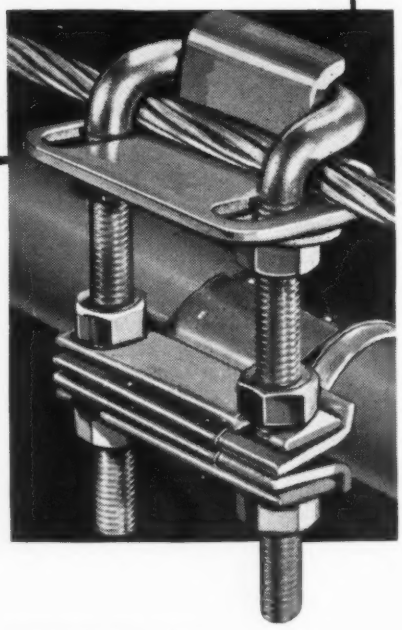

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re-investment which the "excess profit tax" would scoop right out of the plant picture of the future.

Maintenance Testing

(Concluded from page 34)

does not release owing to the leakage circuits which now form the only conducting paths for the current to ground. Hence, the electro-magnetism produced in relay R by the leakage current alone is sufficient to hold the relay armature operated when it ought to have released because of the circuit being broken to battery B.

Number of Poles in Direct Line Per Mile	Approximate Distance Between Poles in Feet	Approximate Distance Between Poles in Miles
5	1320	0.241
6	1056	0.200
7	880	0.167
8	754	0.143
9	660	0.125
10	587	0.116
11	528	0.100
12	480	0.091
13	440	0.084
14	406	0.077
15	377	0.072
16	352	0.067
17	330	0.063
18	310	0.059
19	283	0.054
20	278	0.051
21	264	0.050
22	251	0.048
23	240	0.046
24	230	0.044
25	220	0.042
26	211	0.040
27	203	0.039
28	196	0.037
29	188	0.036
30	182	0.035
31	176	0.034
32	170	0.032
33	165	0.031
34	160	0.030
35	155	0.029
36	151	0.028
37	146	0.027+
38	143	0.027
39	139	0.026
40	135	0.025+
41	132	0.025
42	129	0.024
43	124	0.023+
44	123	0.023
45	120	0.022

Table I

Table 1 gives the number of poles per mile and the distance between poles when set in a straight line and equally spaced. From this table, the amount of leakage paths in a lead may be found. Suppose, for example, a lead is six miles long and consists of 32 poles per mile, the number of leakage paths would be, $6 \times 32 = 192$.

(To Be Continued)

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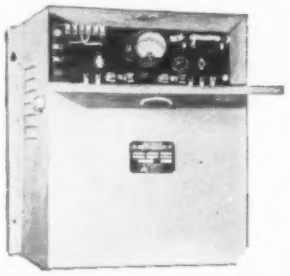

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U. S. Has 60 Per Cent of World's 60,600,000 Telephones

The total number of telephones in the world has reached a record 60,600,000, or one for every 38 persons at the start of 1948, according to the new issue of *Telephone Statistics of the World* released Nov. 29 by the American Telephone & Telegraph Co.

The United States, with only about 6 per cent of the world's population, has nearly three-fifths of its telephones. Of the 6,000,000 telephones gained in 1947, more than 3,250,000 were added in the United States, which at the beginning of 1948 had 34,867,000 telephones in service—one for every four persons. (Since then 3,000,000 more have been added in the U.S.) Sweden had the next highest telephone density with one for every five persons.

The gain in telephones in 1947 was greater than the total number that were in use throughout the world 25 years after Alexander Graham Bell made his historic invention. At the turn of the century there was only one telephone for every 800 persons in the world.

The United States out-talked all other nations in 1947, with 45,000,000,000 telephone conversations—3,000,000,000 more than the preceding year and nearly 12 times as many as in Canada, which held second place. The average American used the telephone 317 times during the year.

New York continued to lead the world's cities with 2,458,102 telephones—more than there are in all of France. Only other city in the world with more than a million telephones was Chicago, with 1,396,387. On a per capita basis, San Francisco still topped the major cities with about one telephone for every two persons. Washington and Stockholm remained second and third in this respect, while Seattle supplanted Denver in fourth place.

More than two-thirds of all the telephones in the world are privately owned and operated, and 85 per cent of these are in the United States. The remaining third are government-owned.

North Borneo has about 430 telephones, Somaliland 335 and French India 72. Of the world total of more than 60,000,000, 96 per cent connect with the American telephone network.

V V

Commonwealth Makes Field Changes

The Commonwealth Telephone Co., Madison, Wis., has announced the following changes in its field organization:

Gunnard Johnson, Chilton, Wis., has been named manager of the company's exchanges at Richland Center, Ithaca, and Bloom City. Mr. Johnson replaces A. C. Jones, resigned.

Hilding Stenklyft, Denmark, Wis., has been named manager of the Chilton group of exchanges, replacing Mr. Johnson.

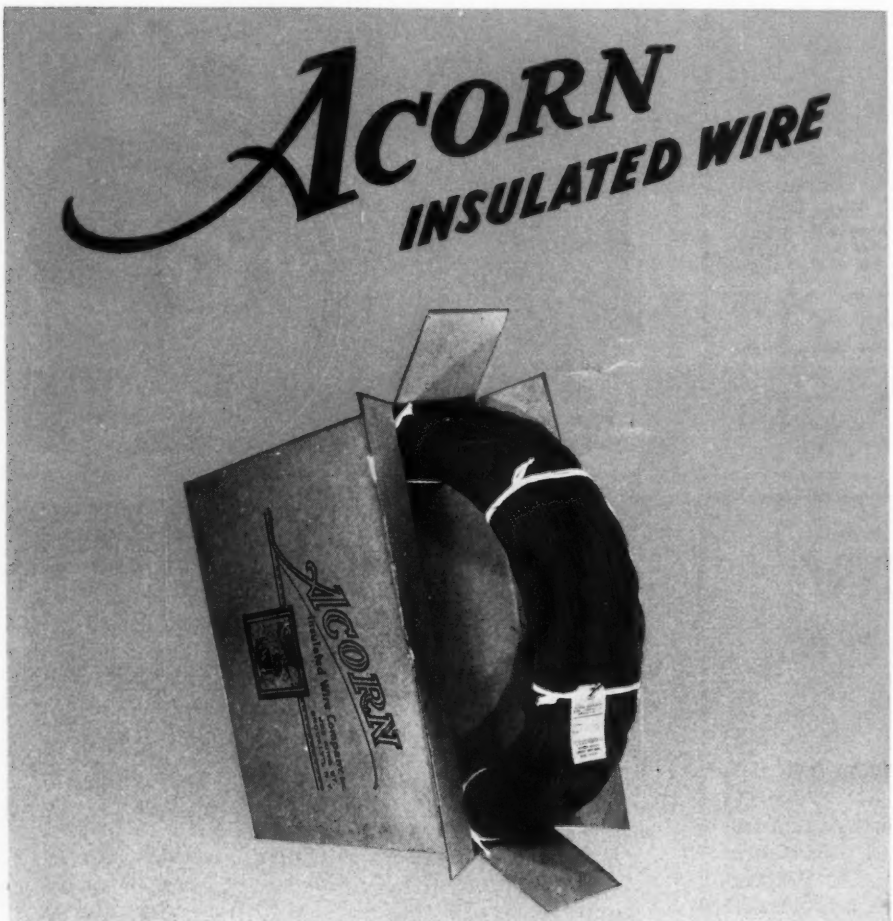
Matthew Benish, Chilton, has been appointed manager of the Denmark and Luxemburg exchanges, replacing Mr. Stenklyft.

A. W. Weber, Plymouth, Wis., has been appointed manager of the Newburg and Waubeka exchanges. He replaces Anthony Popelka who has resigned.

V V

Signal Corps Affiliation Program Progresses

Approximately a third of the reserve units contemplated by the Signal Corps under the army-industry affiliation program that began last year have been activated, according to the Office of the Chief Signal Officer. An-



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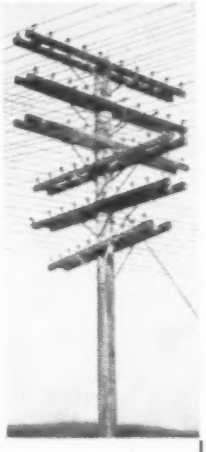

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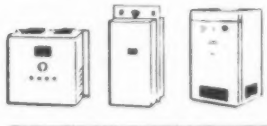

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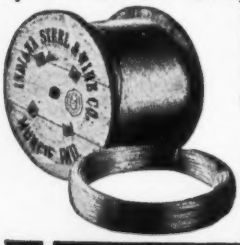

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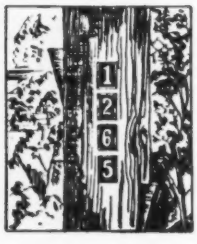

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nouncement also was made of eight recently activated units.

Affiliated units are sponsored by civilian organizations, chiefly industrial, but come under the Organized Reserve Corps and have the same defense functions as other ORC units. Cadre and other key personnel come chiefly from the sponsoring organizations.

Latest units to be activated under the Signal Corps affiliation program are:

490th Signal Radio Relay Company, sponsored by RCA Communications, Inc., San Francisco, Calif.

822nd Signal Installation Company, sponsored by Automatic Electric Co., Chicago, Ill.

491st Signal Heavy Construction Battalion, and Hq. and Hq. Detachment, 301st Signal Service Group both sponsored by the Lincoln (Neb.) Telephone & Telegraph Co.

314th Signal Heavy Construction Battalion, and 217th Signal Depot Company, both sponsored by the Associated Telephone Co., Ltd., Santa Monica, Calif.

Hq. and Hq. Company, 321st Signal Base Depot, sponsored by the Graybar Electric Co., San Francisco, Calif.

800th Mobile Radio Broadcast Company, sponsored by Del Mar Junior College, Corpus Christi, Tex.

V V

Blind Owner Installs Dial System

W. H. Crumly, blind owner of the Crumly Telephone Co., Dawson, Ala., recently expanded the company's telephone service to include the nearby town of Geraldine, Ala., through the purchase and current installation of a new 30-line Kellogg Relaymatic switchboard.

Mr. & Mrs. Crumly are installing the new switchboard in their spare time because the manual board at Dawson is still operating in their home during normal traffic hours daily.

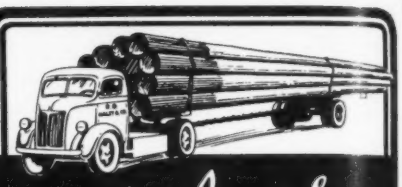
In addition to his operation of this board, Mr. Crumly sets up and repairs his own telephone lines and outside equipment with the part time aid of a young farm hand. About 20 years ago, Mr. Crumly assembled a magneto switchboard with parts and this board is still in use.

Identified with the telephone business since 1904, Mr. Crumly has been totally blind since boyhood.

V V

Hearing on Toll Line Sale

The Arkansas Public Service Commission on Nov. 25 scheduled a hearing for Dec. 1 on the joint application of the Pea Ridge Telephone Co. and the Southwestern Bell Telephone Co. for approval of the latter's acquisition of long distance lines between Rogers and Pea Ridge.



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Radio-Telephone to Aid Miners in Rescue Work

An improved method of communication for mines, the result of many years of Canadian research and experiment, was recently given a successful field demonstration in the Porcupine district of Ontario before representatives of McIntyre Porcupine Mines and Hollinger Consolidated Gold Mines.

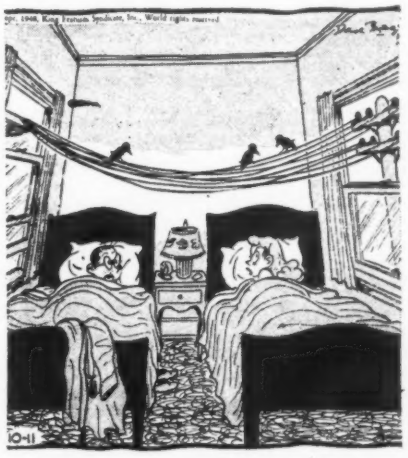
First of its type in Canada, the new system provides radio-telephone communication between men on the surface and those underground and also permits standard code signalling. An added feature of the system is a safety device known as the "slack cable alarm development," which automatically warns the operator in the hoist room should the cable slacken while the shift cage is moving.

The principle underlying the operation is that of power line carrier, the superimposing of a relatively low frequency radio signal on a carrier medium, in this case the hoist cable. The radio frequency signal follows the hoist cable with a minimum of radiation into space. Included in the system are a receiver-transmitter unit, a control box with telephone and mine pull switch, antenna and a battery box.

General telephone signalling used in mines today only provides for communications from level to level, with no provision for contact between stations, since it was found that telephone wiring could not withstand the rigors of mine shafts. However, since the new system only employs the hoist cable as a carrier medium, the cage tender may maintain continuous contact with the hoist man, thus facilitating mine rescue work.

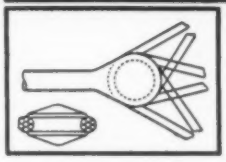
Mister Breger

By Dave Breger



"Sometimes I feel that this house was built TOO close to the road!"

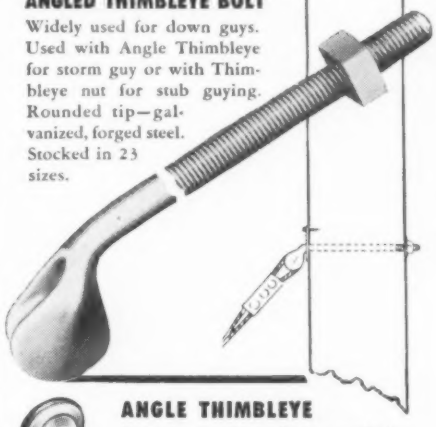
CHANCE GUYING FIXTURES with the IMPROVED Thimbleye Give Complete STRAND PROTECTION



Only Chance and Chance-licensed Anchor Rods and Guying Fixtures have the improved full-rounded Thimbleye that gives complete guy strand protection at every angle. Its contour allows the guy strand to be pulled through without kinking or bending and makes pulling slack easy.

STRAIGHT THIMBLEYE BOLT
For straight or slight angle guys. Used with Angle Thimbleye for stub guy. Rounded tip aids driving in or out—helps start nuts. Galvanized, forged steel. 29 sizes.

ANGLED THIMBLEYE BOLT
Widely used for down guys. Used with Angle Thimbleye for storm guy or with Thimbleye nut for stub guying. Rounded tip—galvanized, forged steel. Stocked in 23 sizes.



ANGLE THIMBLEYE
Forged to a thirty degree angle it is a handy pole attachment for down guys. Easily attached to a through bolt or to threaded end of a Thimbleye bolt for a wide variety of uses.

THIMBLEYE NUT
Heavily galvanized steel drop forging threaded to screw on bolts or rods. Many applications in dead ending, stub or head guying, etc. Often used on screw type anchors.

STRAIGHT THIMBLEYE
Used with an ordinary machine bolt. Elongated hole allows easy insertion of the bolt. Forged steel, heavily galvanized. Like all Chance Thimbleye products, it has the new, full-rounded strand groove that adds life to the guy strand.

C4815

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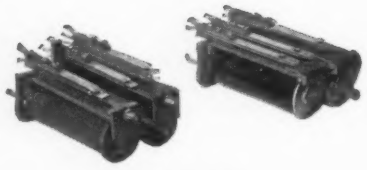

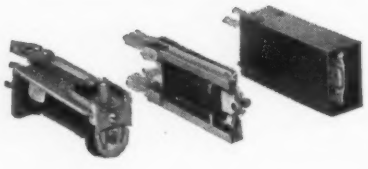

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